FEBRUARY 1955

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V. 36 no. 11

*A paper presented by Swenson before the Second Annual Pulp and Paper Conference.

Get this report on...

KRAFT BLACK LIQUOR EVAPORATION

Send now for this recently published 5-page paper* on kraft black liquor evaporation. It provides information on the design and operating principles of the long tube film-type evaporator as applied to the evaporation of kraft mill liquor. Included is a discussion of the causes of operating problems with evaporators as well as their auxiliary equipment. Be sure to send for this important report today!

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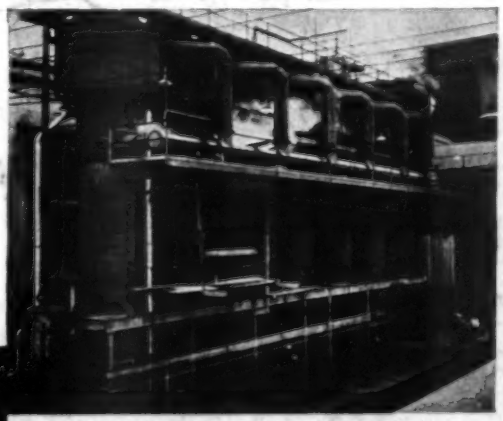

Photograph illustrates a recent Swenson septuple effect evaporator in a west coast mill. Let Swenson, with more than 90% of the septuple effect evaporator installations, show you how to obtain steam economies in the range of 5.5 to 6.0 lbs. of evaporation per pound of steam.

SWENSON

Proved Engineering for the Process Industries

SINCE 1889

A Division of WHITING Corporation

Asten DRYER FELTS

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Expansion

of service to the paper industry

To meet the needs of our customers, the manufacture of ASTEN Dryer Felts in the United States will soon be augmented by a second plant located at Walterboro, South Carolina.

Besides speedier delivery to mills in the South, these new facilities will provide added assurance of emergency supply to ASTEN users everywhere. This modern plant will be in early operation.

Economy in the long run

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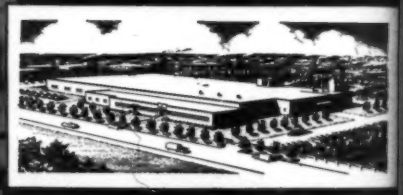

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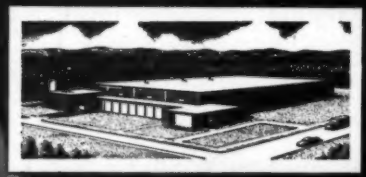
SOUTH CAROLINA



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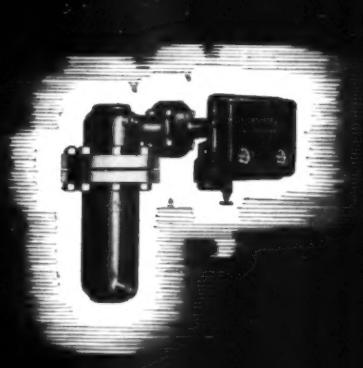

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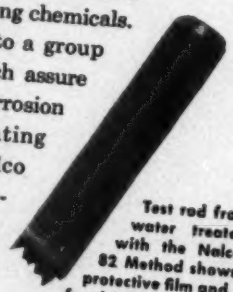
WORLD LEADER IN RESEARCH FOR BETTER PRESSURE AND LIQUID LEVEL CONTROL

Forest of Facts on Nalco RECIRCULATING WATER TREATMENT

NALCO Laboratories' continuous research program has gathered this forest of facts about protecting recirculating water systems. In the search for the most effective *and economical* formula, the metal rods shown have been rotated in all types of recirculating waters and treating chemicals. Results pointed the way to a group of Nalco Treatments which assure users against scale and corrosion in virtually any recirculating waters. For details on Nalco Treatment to fit your particular system, call your Nalco Representative, or write direct.



Test rod from water treated with the Nalco 82 Method shows protective film and freedom from any scaling or corrosive attack.

THE Nalco 82 METHOD MAY BE THE ANSWER FOR YOU

The Nalco 82 Method is particularly suitable for scale and corrosion control in recirculating water systems which fall within the characteristic limits given here. Check them to see if your system should have Nalco 82 Treatment:

- Equipment to be protected contains steel and/or brass.
- Hardness of makeup water is more than 50 ppm; and sulphates and chlorides, as sodium salts, are less than 150 ppm.
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- Silica content of makeup water up to 50 ppm.
- Total alkalinity of makeup more than 40 ppm.
- Recirculation rates between 100 and 100,000 g.p.m.
- Where non-toxic waste water is required.

Act today to get the certain, low-cost protection of The Nalco System. Full data on Nalco 82 in free Bulletin 68.

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The PAPER INDUSTRY is indexed regularly in **Engineering Index** and **Industrial Arts Index.** An index to each volume is issued annually by the publisher as a part of the April number.

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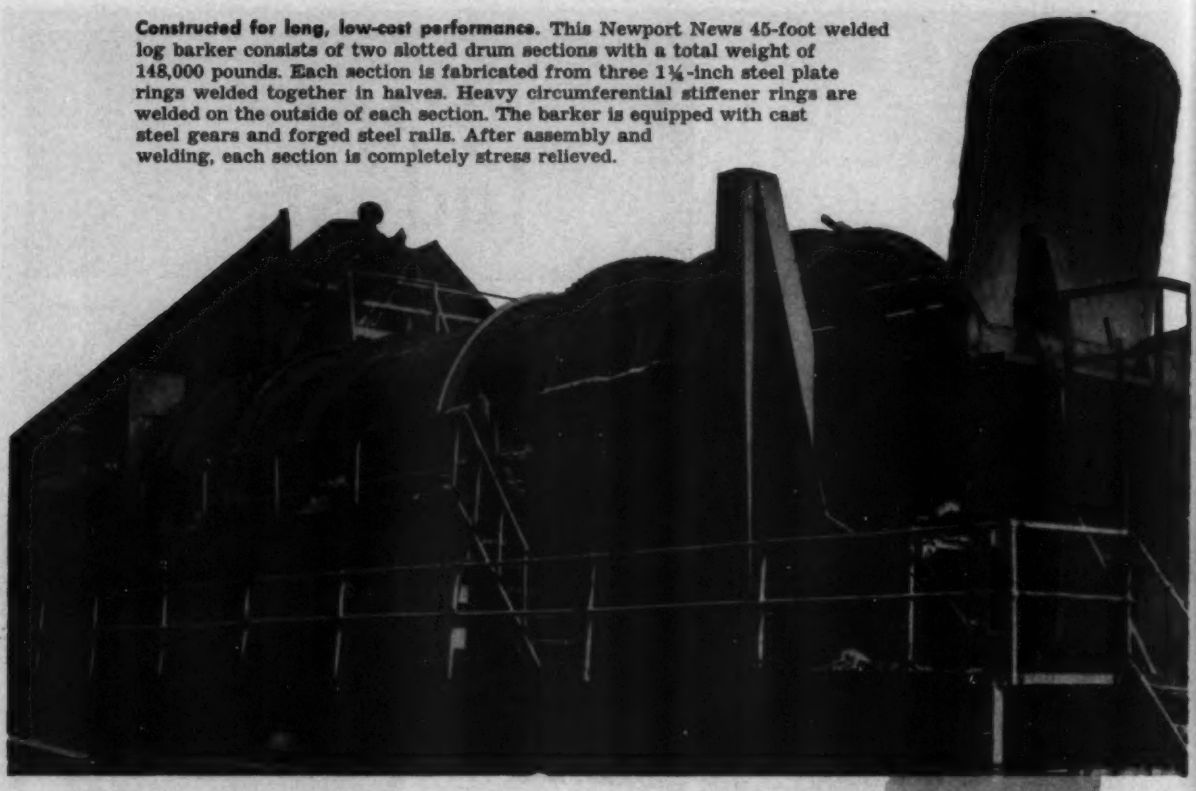
Constructed for long, low-cost performance. This Newport News 45-foot welded log barker consists of two slotted drum sections with a total weight of 148,000 pounds. Each section is fabricated from three 1¼-inch steel plate rings welded together in halves. Heavy circumferential stiffener rings are welded on the outside of each section. The barker is equipped with cast steel gears and forged steel rails. After assembly and welding, each section is completely stress relieved.



Characteristics that Give a Log Barker Bite

Correct design, sturdy materials, advanced production techniques . . .

These characteristics of Newport News fabrication pay off in long, trouble-free, low-cost performance . . . whether the unit is a barking drum, dryer roll, digester or any other equipment incorporating Newport News' attention to detail.

Large engineering and technical staffs, operating a plant with acres of brass, iron and steel foundries, five huge machine shops and other extensive manufacturing facilities enable Newport News to meet most requirements.

Newport News-built equipment for the paper and allied industries has established excellent performance records in leading mills. Send us your inquiries . . . investigate how Newport News can serve you for present or future projects. Write us today for a copy of *"Facilities and Products"* . . . it's yours for the asking.

Newport News Shipbuilding and Dry Dock Company

Newport News, Virginia

Learn why so many thousands of these new mechanical syphon elbows have already been installed. See right in your own mill how they team up with Johnson Joints to end many of the troubles of ordinary syphon drainage pipes. We'll gladly supply a couple of these combinations for a 90-day trial, and even prepay the shipping charges if you wish. There are no strings to this offer, no obligation to you.

Johnson Syphon Elbows are available in ⅛", ⅜", ½", ¾" and 1" sizes. Johnson Joints available in three types shown below. To get full information write, wire or phone us right now.

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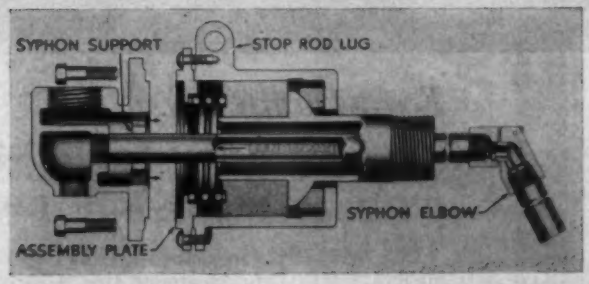

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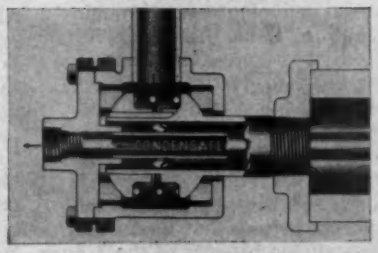

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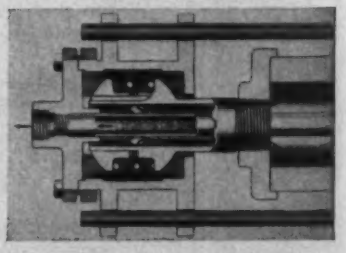

Johnson Rotary Pressure Joints — 3 types answer all needs

Johnson Joints make a pefect combination with the new syphon elbow. They are completely packless, self-lubricating and self-adjusting. For this service a special assembly plate is provided to hold internal parts in position when head is removed; complete syphon pipe, including the new elbow, can be removed right through the joint, in many cases while the machine is operating. Picture above shows the complete combination; the other two do not show assembly plates or syphon elbows.

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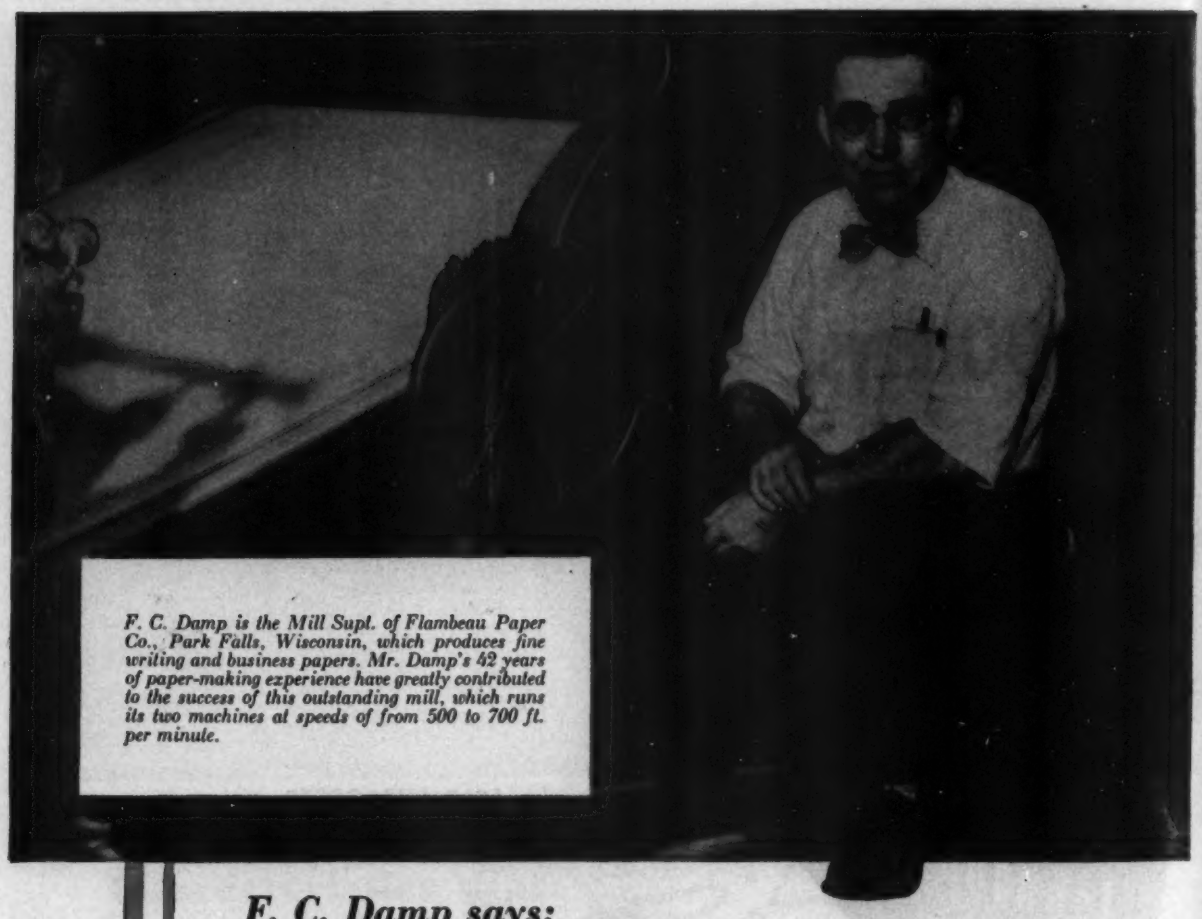
Rotary Pressure Joints • Compressed Air Separators and Aftercoolers
Direct Operated Solenoid Valves • "Instant" Steam Water Heaters



F. C. Damp is the Mill Supt. of Flambeau Paper Co., Park Falls, Wisconsin, which produces fine writing and business papers. Mr. Damp's 42 years of paper-making experience have greatly contributed to the success of this outstanding mill, which runs its two machines at speeds of from 500 to 700 ft. per minute.

F. C. Damp says:

"Albany Felt's J-3 gives me more saleable tons per day!"

Like many of the industry's leading papermakers, F. C. Damp has found that Albany Felts do make a difference in maintaining top production and reducing costs through trouble-free operation. Using Albany Felts exclusively on two of the press positions of his machines, he has had particularly good results with the J-3 chemical treatment, and makes this comment:

"I find that by using Albany Felts on these two positions I get more tons per day of saleable paper, and that the labor cost involved in washup periods has been cut considerably through the benefits of the J-3 treatment, which keeps felts more open and porous even at the end of felt life."

The J-3 chemical treatment is just one of many outstanding developments that permit Albany Felts to consistently produce "more saleable tons per day." The "know how" of experienced sales and service engineers in the field means the proper translation of your problems to Albany's designing-manufacturing team. This, in turn, assures you of the right application of wools, synthetic fibers, treatments, and styles to meet your particular need. Let Albany Felt show you how this teamwork of the industry's leading craftsmen can bring *you*" more saleable tons per day."

SLIDE FILM ON FELT MAKING. If you're looking for an interesting, informative presentation for your training program or a mill personnel meeting, let us schedule a showing of Albany Felt's color-sound slide film "Felts for Paper Machines." Write today for full information.

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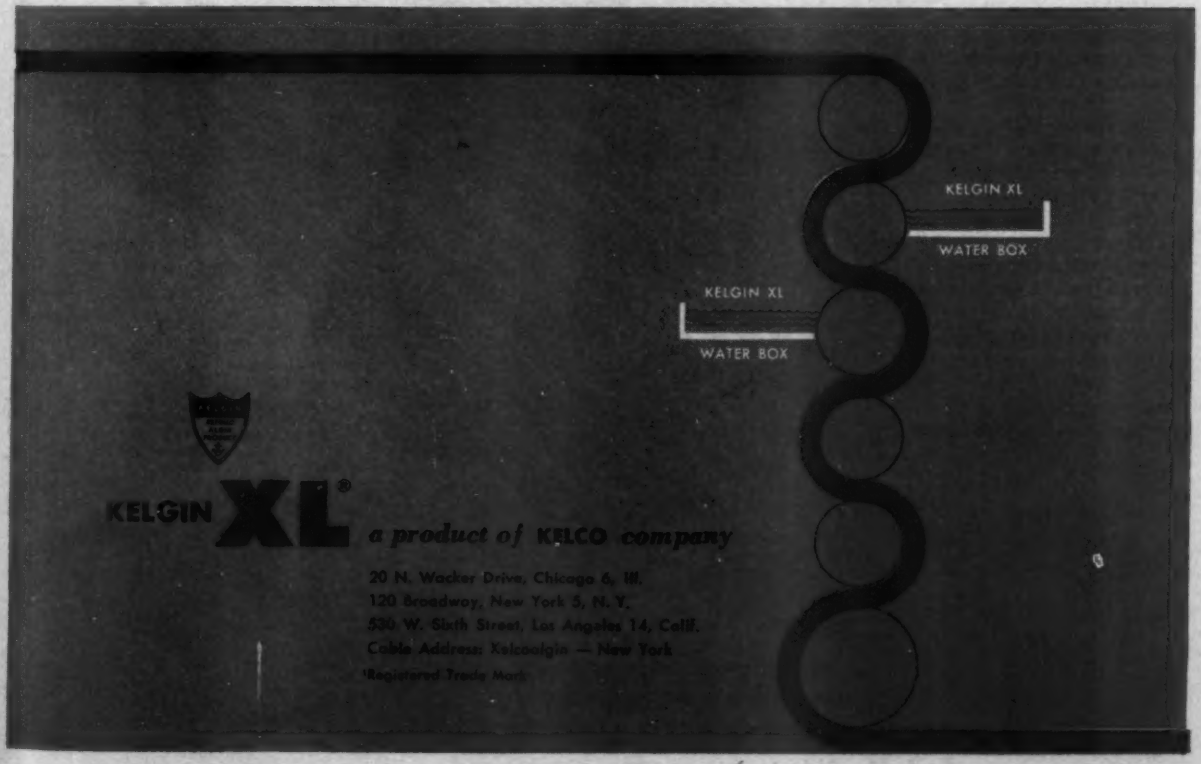
Write your nearest regional office for complete information now.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B&W Seamless and Welded Carbon, Alloy and Stainless Tubing for Condensers and Heat Exchangers

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This grade is used where service conditions are mild, that is, where the temperatures involved are relatively low and corrosive attack is not anticipated.

LOW CHROMIUM STEELS
The addition of chromium and molybdenum give these alloys good strength at elevated temperatures and improved resistance to oxidation as well as resistance to deterioration in services involving some hot corrosive gases.

INTERMEDIATE CHROMIUM STEELS
These grades have applications similar to those of the low chromium group except the additional alloying elements improve their characteristics and permit higher operating temperatures. They are particularly adapted to the handling of oils or hydrocarbon fluids containing sulphur compounds.

NICKEL STEELS
These steels are particularly suited for handling neutral salt solutions such as sodium and potassium nitrate or sulphate. They have found service in the black liquor evaporators of soda and kraft paper mills. Another field of application has been in sub-zero temperature service where high impact resistance is also a necessity.

STAINLESS STEELS
These steels are for specialized application where service conditions are extreme, that is, where corrosive environments or high temperatures are problems. The stainless steels have wide usage in the chemical industries, petroleum refinery, paper making, drug preparation, food processing and dairy and beverage industries.

For sound assistance in meeting your specific tubing requirements, write for Bulletin TB-329A or, better yet, get in touch with Mr. Tubes, your link to B&W. He represents B&W's headquarters technical staff and strategically located district offices, and B&W's nationwide network of fine tubing distributors.

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The Emerson Magnetic Trap

The Emerson Magnetic Trap introduces a new idea for separating junk material from paper pulp and other liquid flow lines — particularly where conditions of high stock velocity and consistency exist. Combining the principle of the trap with that of magnetic separation, the removal of both magnetic and non-magnetic material is accomplished. You no longer need to fear the danger of tramp metal damaging expensive machinery or equipment.

Engineered for Efficiency — Stock is directed to the plates at right angles. As the square-inch area of the plates is over four times that of the pipe, stock remains over the plates more than four times longer — well within the flux pattern of the magnets — with no restriction to normal pipe line flow. A rush of stock from inlet to outlet is prevented by a baffle. Stock leaves the plates vertically — slowly — relieved of all junk material.

Greater Magnetic Power — Emerson Heavy Duty Magnetic Plates — carrying a 10-year pulling power guarantee — were specially designed for this unit. Magnets are cast of the new super [illegible] Hyflux Alnico V with 22% more magnetic strength — completely enclosed in stainless steel non-magnetic housing.

Easy to Clean — One complete turn of the nuts frees the gibs and the hinged doors are free to open. Plates can be cleaned inside the housing or removed.

Easy to Install — Emerson Magnetic Traps are equipped with Standard Class 125 C.I. pipe flanges for connection on 8", 10", 12" or 16" pipe lines.

Send for Catalog 1044-M for information on:

Emerson Magnetic Traps — for difficult conditions of separation.

Emerson Magnetic Separators — for moderate conditions of separation — stocked in 6", 8", 10", 12" and 14" pipe sizes.

Emerson Magnetic Plates — for separate installations in troughs, pipes, chutes, flow boxes, head boxes, etc.

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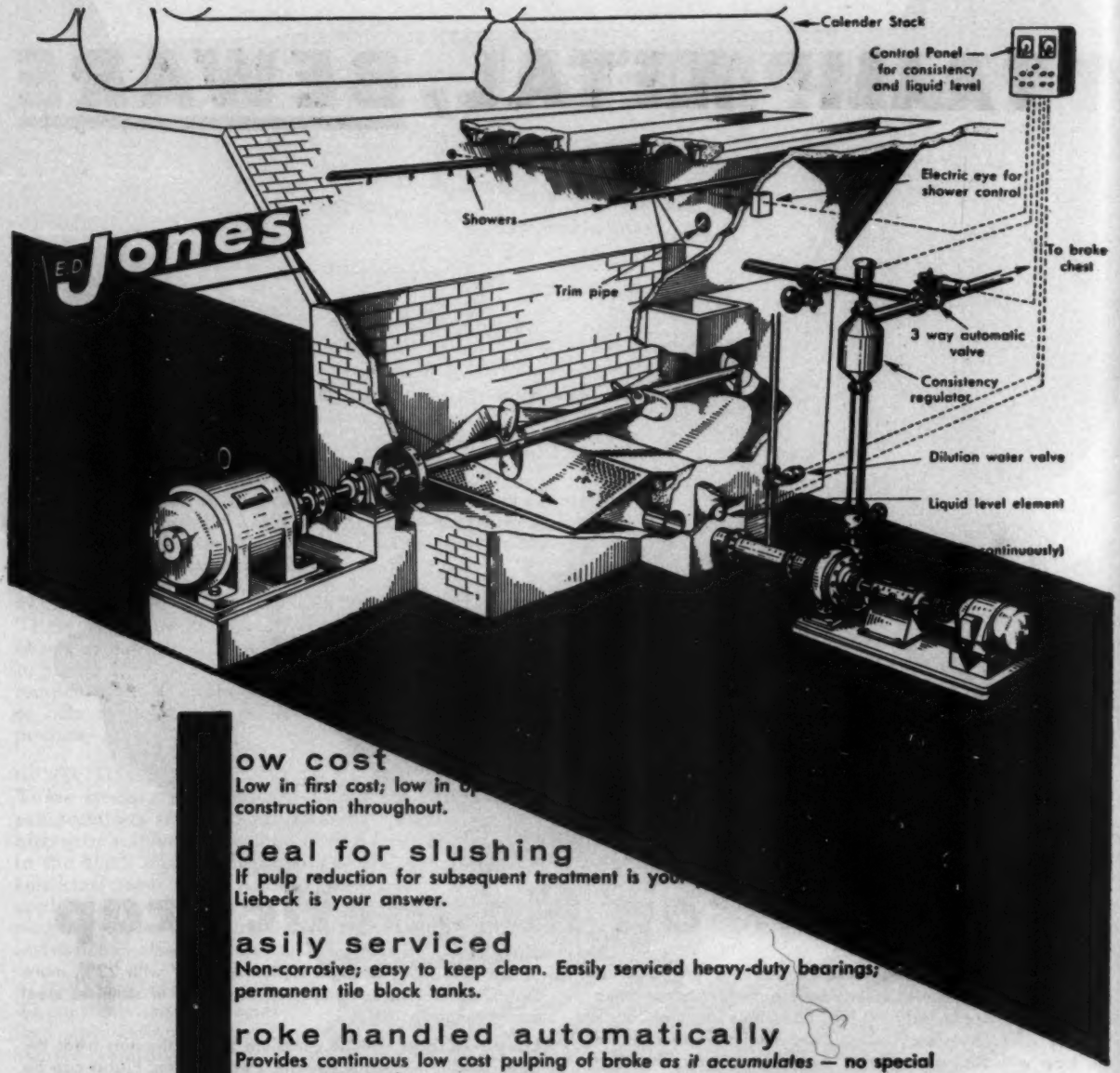

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Testing under mill conditions and fully automatic controls insure dependable uniform performance.

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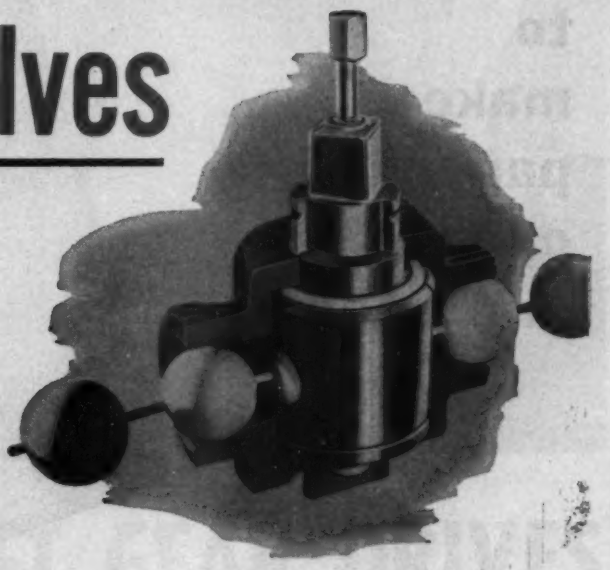
THE "HOLE" TRUTH

ABOUT round port plug valves



The truth is: no other opening will give you the flow perfection of a round hole! Because acf Round Port Valves are the exact size and shape as the pipe itself...you get smooth, unrestricted flow of even the most heavy viscous ladings. There are no obstructions...no loss in head pressure...no turbulence and harmful abrasive effects from solids in suspension.

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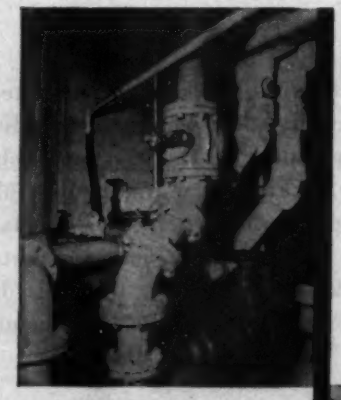

In Sewage treatment

In Steel Plants

In the Cement Industry

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to make paper opaque and bright

...and Du Pont makes it!

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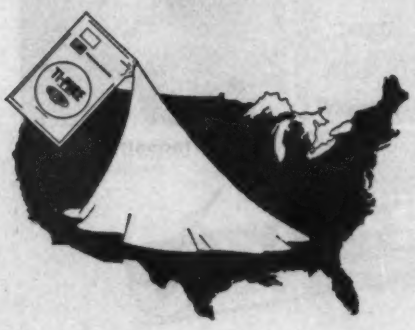

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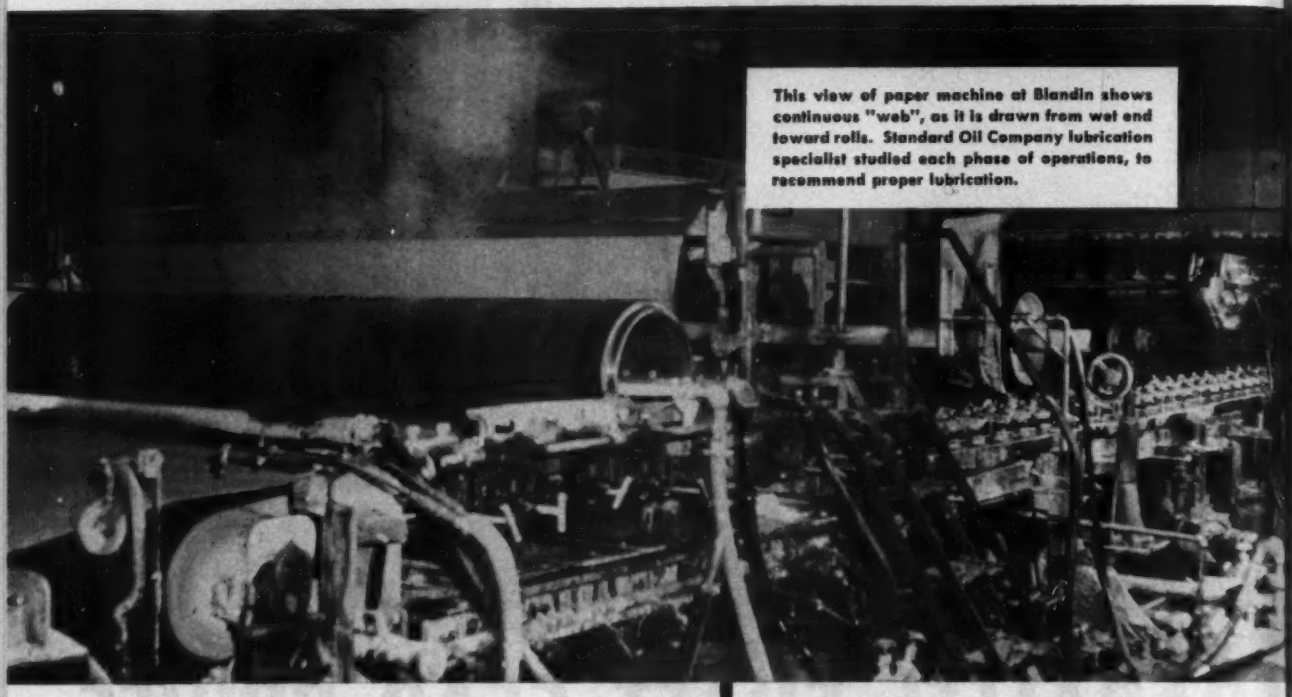
STANOLITH GREASE *overcomes trouble spot, keeps paper rolling at* BLANDIN



This view of paper machine at Blandin shows continuous "web", as it is drawn from wet end toward rolls. Standard Oil Company lubrication specialist studied each phase of operations, to recommend proper lubrication.

STANOLITH Grease aided the solving of a rough lubrication problem at Blandin Paper Company in Grand Rapids, Minnesota.

A bottleneck on the paper making machines threatened production at this hustling paper plant four years ago. The trouble occurred near the beginning of the process, where the pulp contains up to 99% water. At this point, bearings are greeted by a shower of water and stock.

Greases were quickly lost, literally washed away. Bearings were ruined early in life. Not only had greases failed in their duty but they caused paper staining.

A Standard Oil lubrication specialist recommended STANOLITH Grease for use on the wet end of the paper machine. It did such a good job that Blandin maintenance personnel put this multi-purpose grease to work on other applications, too. Now, except when open gear and brick greases are required, STANOLITH serves the entire plant, replacing a wide number of single-duty products.

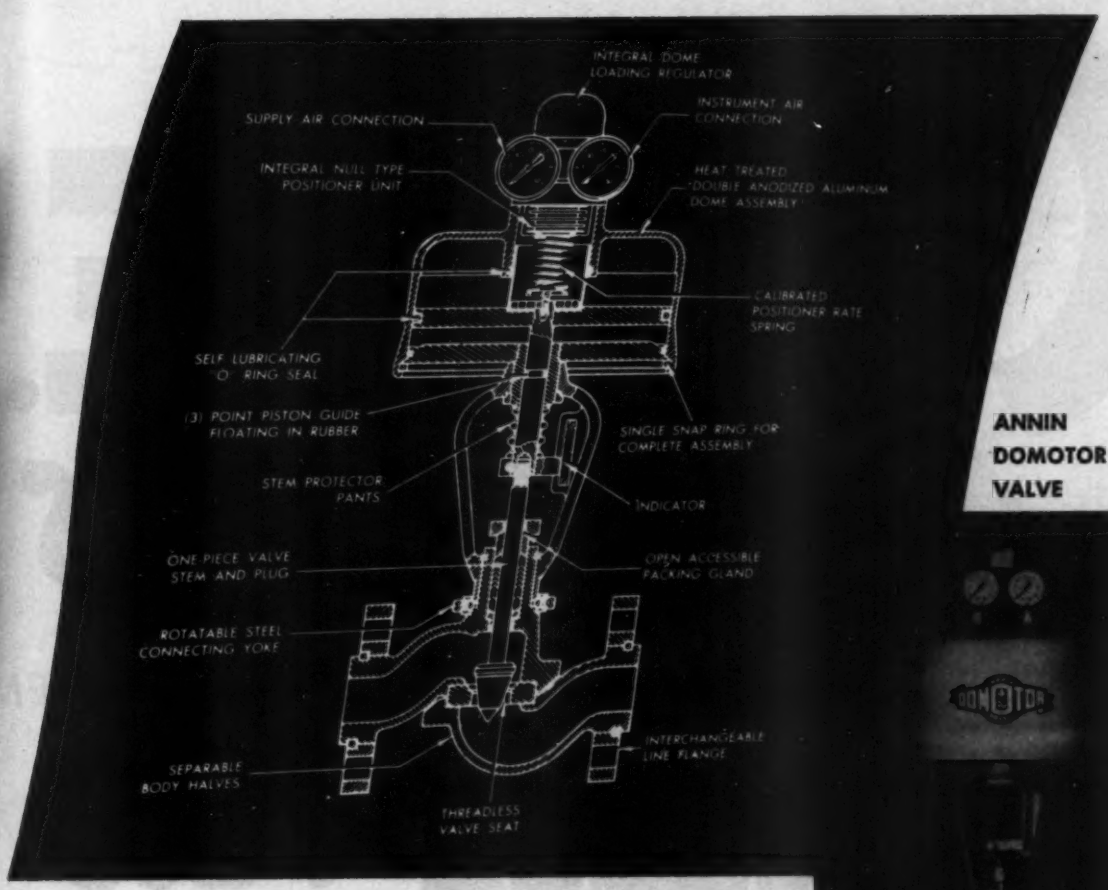
STANOLITH is truly a multi-purpose grease. It may be used almost anywhere on the job, in mechanical or hand-operated dispensers. STANOLITH Grease is heat and water resistant. It will reduce grease inventories, eliminate waste and prevent costly application errors. Find out more about how STANOLITH Grease can help you do many tough lubrication jobs with just *one grease!* In the Midwest call your nearby Standard Oil lubrication specialist. Or contact Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.

Blandin maintenance man, Fred Harwood (left), and I. A. Westerlund, Standard Oil lubrication specialist, inspect a table roll bearing. This is just one of many places in the plant where STANOLITH Grease provides top-efficiency lubrication.

I. A. Westerlund is a graduate of the University of Minnesota with an engineering degree. He is also a graduate of Standard's Sales Engineering School, and makes good use of his training in providing technical service to customers. He's been doing this for 14 years. His customers find this experience and training pay off *for them.*

STANDARD

STANDARD OIL COMPANY (Indiana)


INTEGRAL DOME LOADING REGULATOR
SUPPLY AIR CONNECTION
INSTRUMENT AIR CONNECTION
INTEGRAL NULL TYPE POSITIONER UNIT
HEAT TREATED DOUBLE ANODIZED ALUMINUM DOME ASSEMBLY
CALIBRATED POSITIONER RATE SPRING
SELF LUBRICATING "O" RING SEAL
(3) POINT PISTON GUIDE FLOATING IN RUBBER
SINGLE SNAP RING FOR COMPLETE ASSEMBLY
STEM PROTECTOR PANTS
INDICATOR
ONE PIECE VALVE STEM AND PLUG
OPEN ACCESSIBLE PACKING GLAND
ROTATABLE STEEL CONNECTING YOKE
INTERCHANGEABLE LINE FLANGE
SEPARABLE BODY HALVES
THREADLESS VALVE SEAT

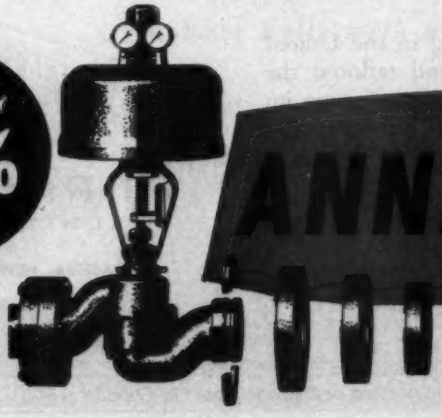
ANNIN DOMOTOR VALVE

ANNIN STANDARD VALVES HANDLE THE TOUGH JOBS

The Paper Industry from coast to coast now specifies Annin Domotor Valves for pulp mill, bleach plant, power plant and paper mill applications. Only Annin Single Seat Control Valves provide reliable, tight shut-off and meet present instrumentation standards of speed, response and positioning accuracy. Interchangeability of valve bodies, flanges, operators and plug assemblies lowers the initial investment and cuts inventory requirements.

WRITE TODAY *for illustrated bulletin showing how and why Annin offers the best buy in control valves.*

CUT INVENTORY 50% WITH



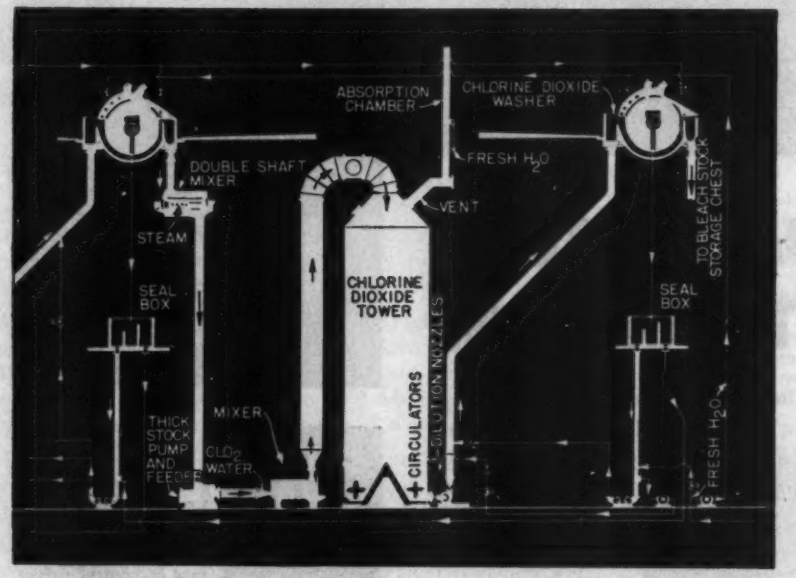
ANNIN *Control* VALVES

THE ANNIN COMPANY 6570 E. Telegraph Road
Los Angeles 22, California

90 G.E. BRIGHTNESS

with

IMPCO CHLORINE DIOXIDE BLEACHING SYSTEM



PLUS

- Highest Brightness
- Excellent Pulp Quality
- No Strength Loss
- Low Chemical Costs
- Reduced Pulp Shrinkage
- Lower Solids to Sewer
- Fits Any Existing System

With the advent of chlorine dioxide bleaching in the United States, IMPCO studied the problem carefully and tailored the first working high density system. This pioneering unit was installed in a prominent mid-southern kraft mill with outstanding results. Since that time IMPCO systems have gone into operation on soda, sulphite and semi-chemical pulp. This continuous high density process has produced successful results from the very beginning and today 22 IMPCO systems are bleaching over 6000 daily tons of high brightness quality pulps. We welcome the opportunity to work with you.

IMPCO

IMPROVED MACHINERY INC.

NASHUA, NEW HAMPSHIRE

Sherbrooke Machineries Limited manufacture similar equipment in Canada

and NOW *in* GRIFFIN

A ***NEW*** Stowe-Woodward rubber roll covering plant . . . all new . . . and designed from the ground up for the manufacture of rubber covered rolls exclusively.

Here in Griffin . . . in the heart of the expanding Industrial South . . . are complete facilities for every stage of manufacture, from raw rubber to finished roll, including the big rolls of today, and the bigger ones of tomorrow. Like Stowe-Woodward's Neenah Plant . . . opened less than 8 months ago . . . this new southern plant is part of a program planned to bring closer to the industries it serves, Stowe-Woodward's

"Rubber Rolls with a Reputation"

S-W INC.

STOWE-WOODWARD, Inc.

NEENAH, WISCONSIN — NEWTON 64, MASSACHUSETTS — GRIFFIN, GEORGIA

The Glatfelter Story

P. H. GLATFELTER CO.
QUALITY PAPERS
SPRING GROVE PENNSYLVANIA

HAM FELTZ says:

P. H. Glatfelter Company at Spring Grove, Pennsylvania, supplies Quality Papers to many of the nation's largest converters and big-edition publishers of books. Equally important is their service through wholesale paper merchants who supply printers and advertisers from the New England States to Florida and the Mississippi Valley. One Glatfelter machine alone runs a sheet 15 feet wide at over 800 feet a minute every working day from New Year's to Christmas. To dry this sheet calls for the finest woolen felts. This is one reason why Glatfelter is such a steady customer for HAMILTON FELTS.

Hamilton Felts

MIAMI WOOLEN MILLS
Established 1858

SHULER & BENNINGHOFEN, HAMILTON, OHIO

here is the means for

Fast, Trouble-free Paper Machine Drainage

THE ARMSTRONG SPECIAL DRYER DRAINAGE TRAPS
Big air vent for fast heat-up
Hardened chrome steel valve and seat—for long, long life
Condensate and air enter above water level—preventing wear-producing agitation
A size for every dryer
BIG CAPACITY
Bucket and lever assembly are stainless steel to fight wear and corrosion
Add it up!
1. All the capacity you need
2. Fast air venting
3. Low Maintenance
Mail the coupon now!
Unconditional GUARANTEE
Satisfies you or your money back

ARMSTRONG

Dryer Drainage Traps . . . Moisture Control for Paper Machines . . . Individual Dryer Temperature Control . . . Thermal Air Eliminator . . . Steam Humidifiers . . . Inverted Bucket Steam Traps

ARMSTRONG MACHINE WORKS
816 Hoffman Street, Three Rivers, Michigan

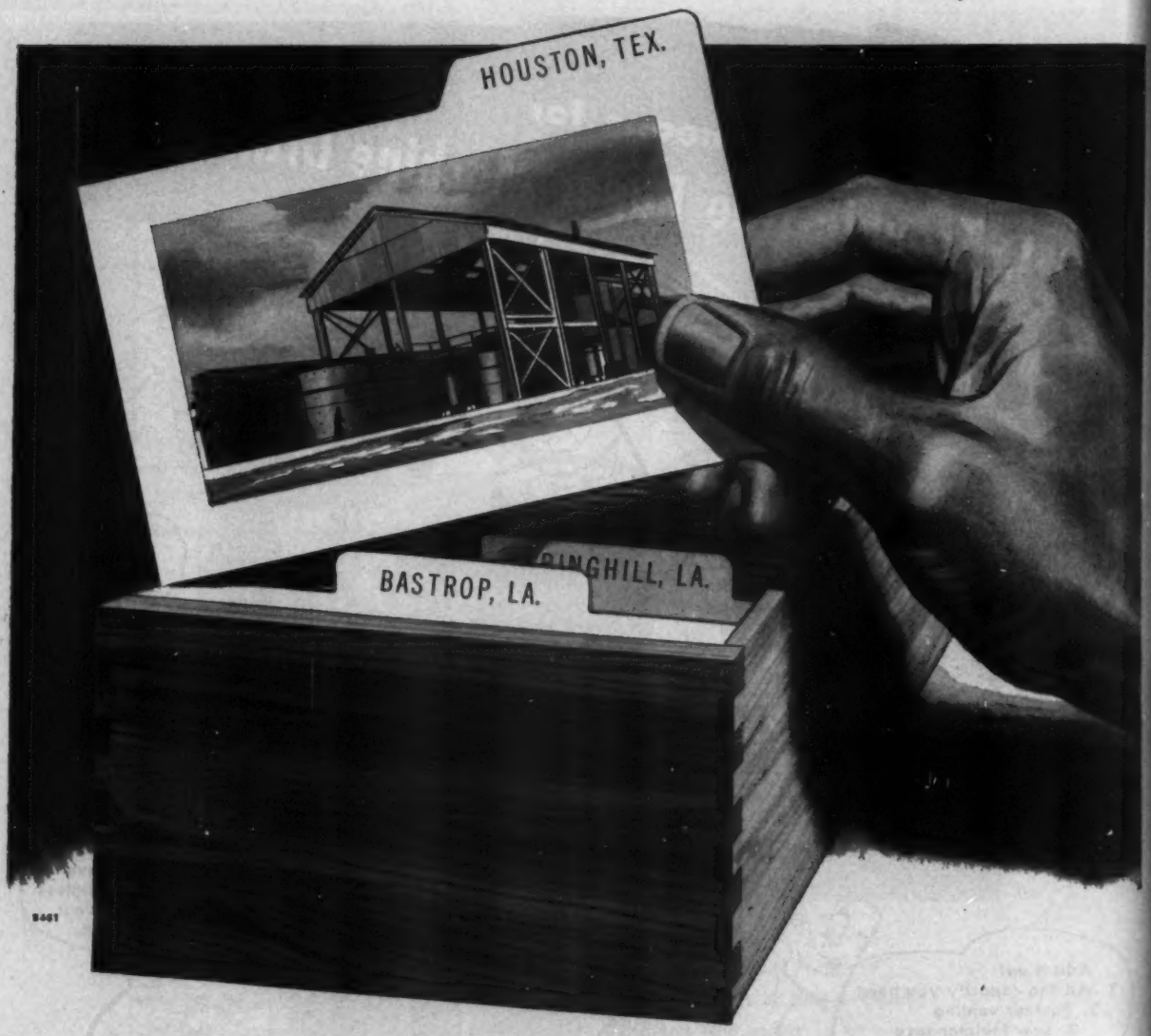
SEND ME BULLETIN 205
explaining Armstrong Dryer Drainage Traps.

Name_____

Company_____

Street Address_____

City_____ State_____



A new source for Consolidated Alum . . .

To answer the rapidly increasing demand for aluminum sulphate in the industrial Southwest, Consolidated has recently completed this alum liquor plant at Houston.

The plant is the first of its kind in Texas; it incorporates all the applicable advances in efficiency and quality-control which Consolidated has developed in its 75-year history. For only one example: The plant gets its sulphuric acid from the company's unique acid regeneration units which produce new white acid from what was formerly waste sludge.

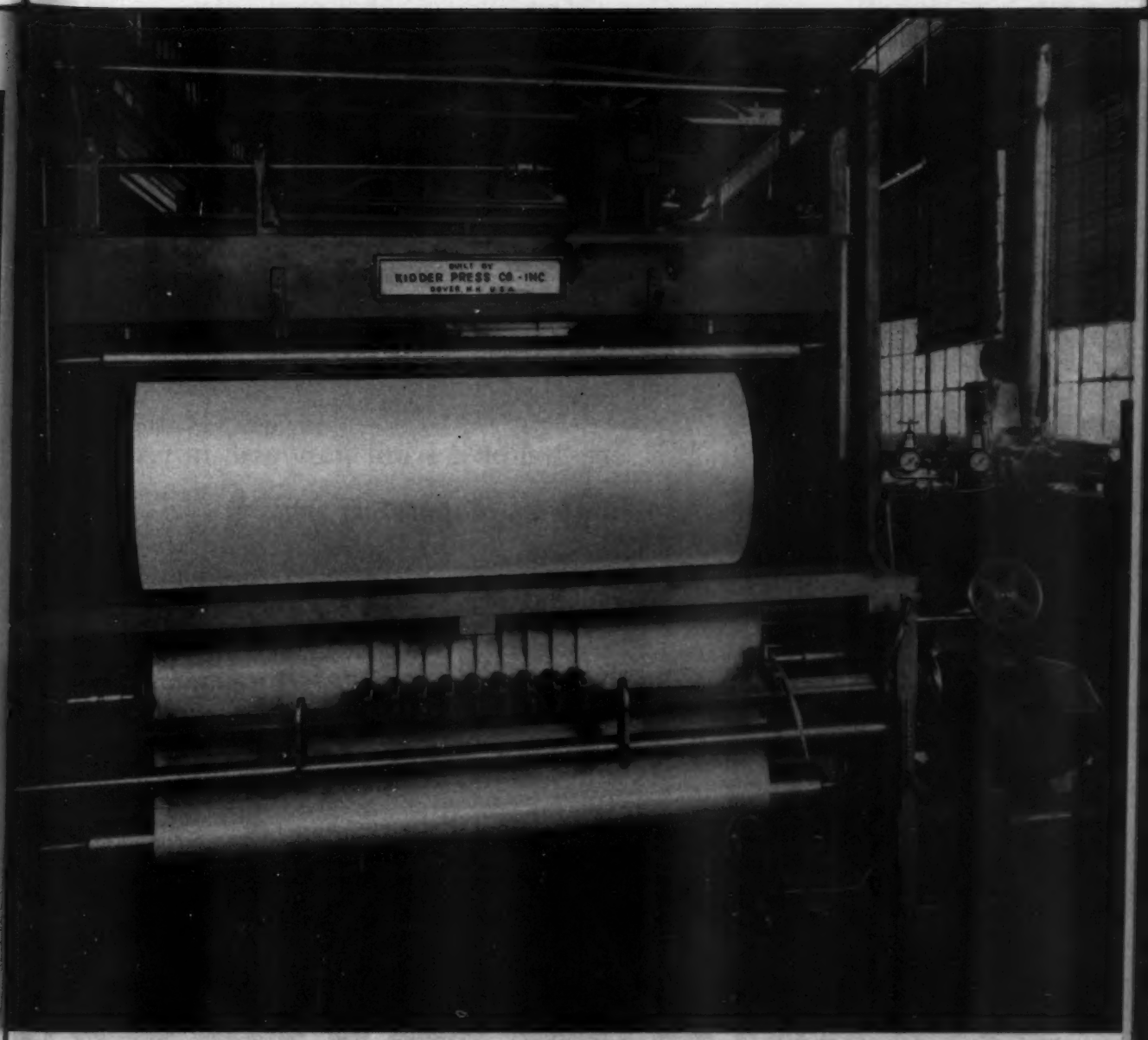
Other large alum plants are strategically located at Bastrop and Springhill, Louisiana, where Consolidated has long produced this important industrial chemical.

Used as a filtering agent in Houston's new surface water system, Consolidated Alum is vital also in treating raw water for industrial use . . . as a fiber binder in paper-making . . . and in many other industrial processes.

Consolidated's experience . . . plus its ever-broadening facilities . . . may be the answer to *your* alum requirements.

CONSOLIDATED CHEMICAL INDUSTRIES INC.

640 ESPERSON BUILDING • HOUSTON 2, TEXAS
380 MADISON AVE. • NEW YORK 17, NEW YORK
SULPHURIC ACID • MURIATIC ACID • ALUMINUM SULPHATE • BONE BLACK



No Other Slitter offers you the cost-cutting, gearless construction of the Kidder Model G. T. Many other advancements make it ideal for handling stock ranging from 200 pound tag to the lightest tissue.

When you're measuring slitting-accuracy in thousandths...

nothing can equal Kidder shear cutting. On this Kidder Model G. T. Slitter, for example, the back cutters controlling the width of cut cannot move, and the front cutters are self-sharpening. This advanced shear-cut method — standard on all Kidder Slitters — assures maximum accuracy, long service life, dust-free slitting and positive roll separation.

In addition, the Model G. T.'s gearless drive design (introduced by Kidder in 1949) plus anti-friction bearings and dynamic balancing help keep maintenance at its very lowest.

These are just a few of the reasons why you can count on the Model G. T. Slitter for continuous high speed, high production operation, with negligible down time. For full particulars on the Model G. T. and on all Kidder Slitters and Winders, write to Kidder Press Company, Inc., Dover, New Hampshire.

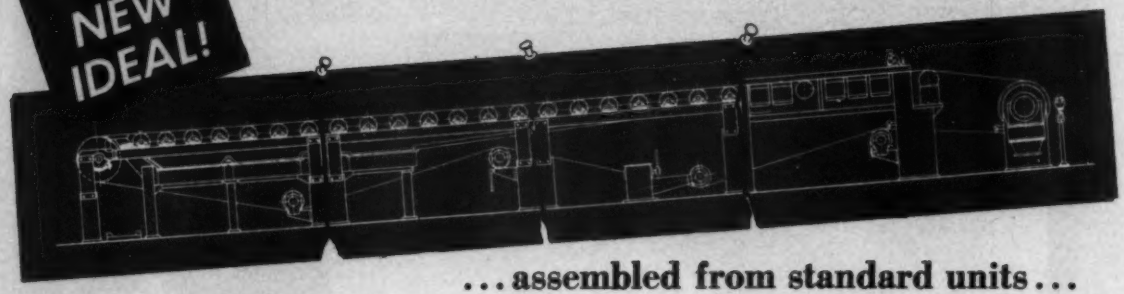
Kidder

3 POINT SLITTERS

High Speed Operation
Dust-Free Cutting • Easy Roll Separation

Radically New Sandy Hill Fourdrinier to Fit Your Production Needs!

it's the NEW IDEAL!



... assembled from standard units ...

adaptable in width and wire-length ... moderately priced.

The Sandy Hill New Ideal Fourdrinier merits the consideration of mill men interested in improving the quality of their papers and increasing production — without excessive investment.

SIMPLE EFFICIENT ECONOMICAL

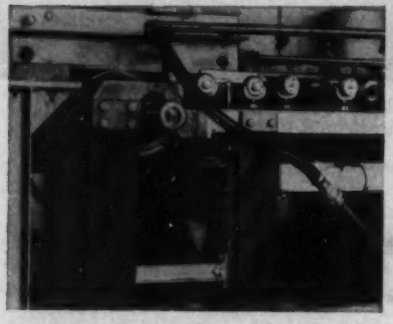
By standardizing component elements, Sandy Hill has achieved lower costs, higher efficiency and quicker delivery. Quality has been maintained or improved, while substantial economics have been effected.

With changes in the length of the forming table and variation in the number of suction boxes, the New Ideal Fourdrinier will make nearly any kind of paper.

It lends itself especially to the rebuilding of machines in specialty mills where a fourdrinier is required that will meet the most particular needs, but where it is necessary to conserve capital expenditure.

You will find it attractive because of low maintenance cost, improved forming and water removal characteristics, and minimum capital investment.

It is a new approach to fourdrinier construction. The standardization of units in combination with standard design for the basic parts provide a fourdrinier unit of extremely high functional efficiency.



BREAST ROLL SECTION

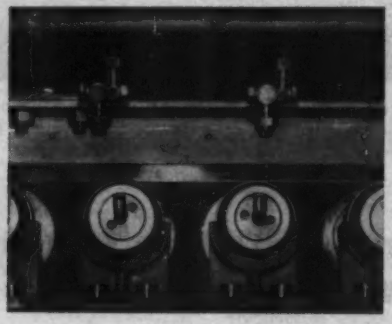
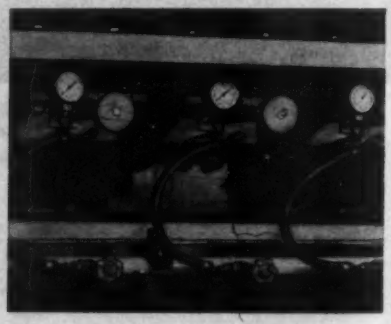
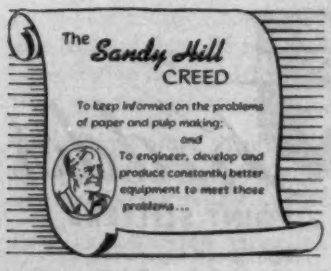


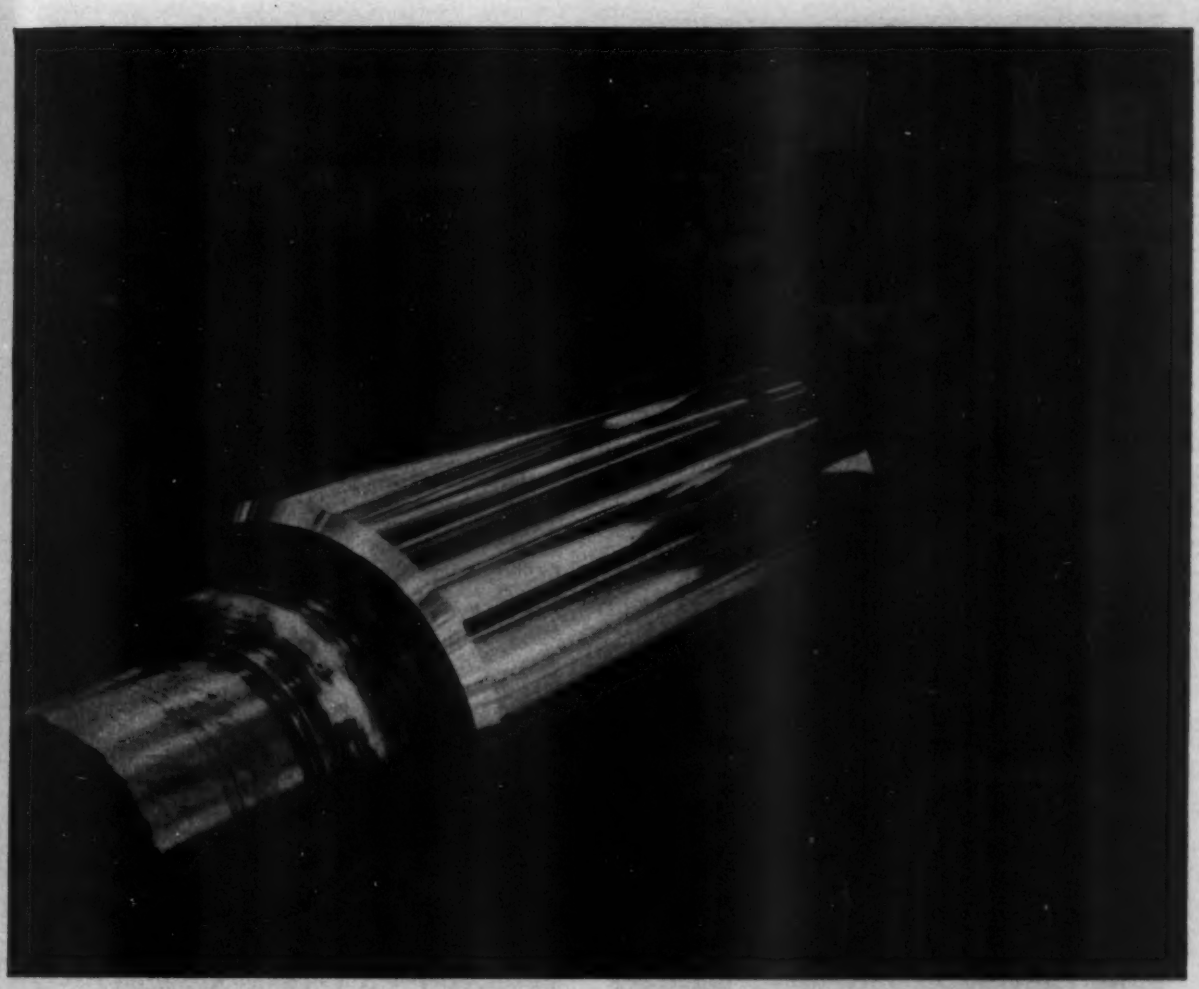
TABLE ROLL BEARINGS



SUCTION BOX SECTION


The Sandy Hill CREED
To keep informed on the problems of paper and pulp making; and
To engineer, develop and produce constantly better equipment to meet those problems...

WRITE FOR NEW DESCRIPTIVE FOLDER



MIDVALE STAINLESS STEEL ROLLS

FORGED FOR EXTRA SERVICE... MACHINED FOR BETTER FINISHES

For rolling paper or board . . . from 48 inches to 228 inches across the face . . . higher pressures, faster speeds and wet, corrosive conditions . . . Midvale Rolls are forged to meet them all and provide extra service life with fewer regrinds.

Midvale quality starts with the forging; finest specialty steel, expert heat treating, precision machining and grinding. Midvale Roll performance has been proved in leading mills from coast to coast on wet-end or finish-end calenders or super-calenders.

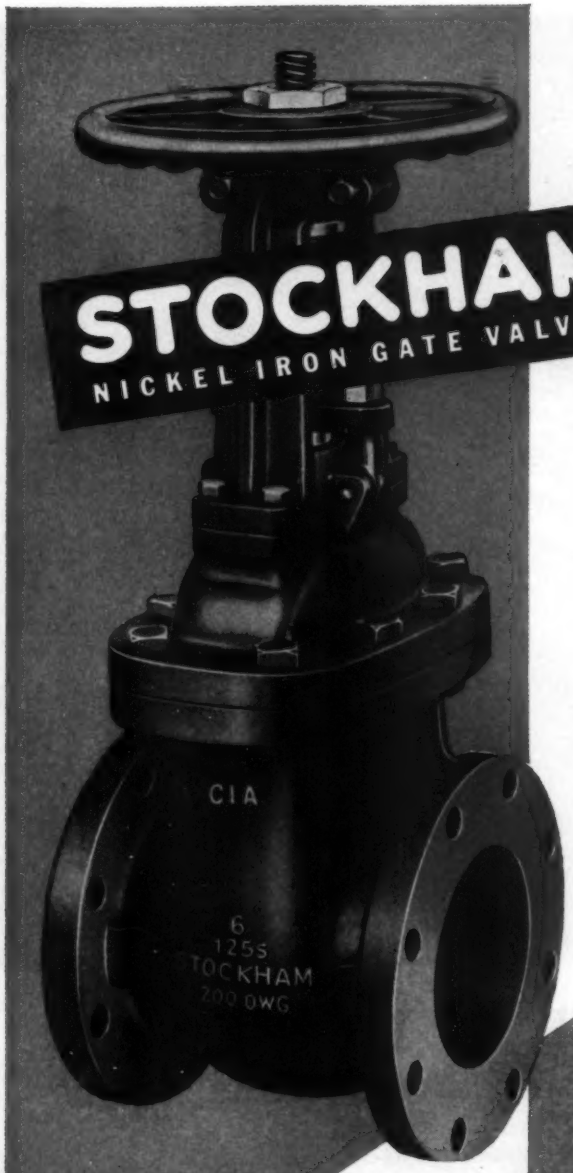
Whatever your needs in rolls why not consult us? Fine mirror finishes can be furnished to any hardness up to 100 Shore for forged alloy and 70 miminum Shore for stainless steel. Midvale can also supply corrugated and embossed rolls of any size and hardness. Take the first step toward the savings you can realize with Midvale Rolls . . . send for your copy of the folder on hardened and ground rolls.

THE MIDVALE COMPANY- Nicetown, Philadelphia 40, Pa.

Offices: New York, Chicago, Pittsburgh, Washington, Cleveland, San Francisco

MIDVALE

FORGINGS, ROLLS, RINGS, CORROSION AND HEAT RESISTING CASTINGS



Corrosion resistance at lower cost

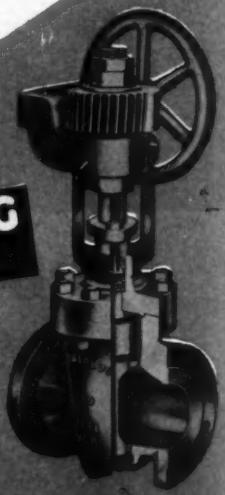
Stainless steel trim, plus nickel iron body and bonnet provide exceptional resistance to corrosion.

Reversible solid wedge disc accurately machined to correct taper on both sides.

Available with cleanouts for removing sediment without dismantling valve.

Can also be furnished with by-pass.

Make Stockham your buy word in valves. Find out how Fig AG-642 can help cut your costs.



VALVES:

Bronze • Steel
Iron Body

FITTINGS:

Cast Iron Screwed, Flanged
Cast Iron Drainage
Malleable Fittings & Unions

WEDGEPLUG NON-LUBRICATED STEEL PLUG VALVES

Unexcelled for control of slurry at temperatures up to 1000° F. Non-lubricated tapered plug lifts, turns and reseats in one operation. Available for wrench, hand wheel, worm-gear or remote control operation.

WEDGEPLUG VALVE COMPANY, INC.
NEW ORLEANS, LA.
An affiliate of Stockham Valves & Fittings

STOCKHAM VALVES & FITTINGS

DISTRIBUTED THROUGH WHOLESALERS

operation emergency!

On a recent Friday, a customer phoned us that one of their big board machines was operating without a spare bottom felt... and that in case of accident, the machine would be shut down.

Understanding the urgency of the situation, we gave the order our RED TAG SERVICE, and shipped the felt in 3 days... forestalling expensive down time. Normally, weeks are required to produce a large felt of this type.

While requests for such emergency service are not customary, this example clearly illustrates Huyck's manufacturing capacity and flexibility... helpful service which backs up our slogan... "FIRST IN SERVICE."

HUYCK FELTS
first in quality...
first in service

Here is what this customer wrote us:

"We want to acknowledge the excellent service you gave us on the 270 foot bottom felt for #2 machine. To say the least, this service was amazing. It isn't often that a manufacturer pitches in and does the service job that you people have done in this particular instance, and we wish to extend to you not only our compliments on your efficiency, but our sincere appreciation of the effort you made for us."

F. C. HUYCK & SONS

KENWOOD TEXTILE PRODUCTS

ESTABLISHED 1870

RENSSELAER, N.Y

POWELL VALVES . . . THE COMPLETE QUALITY LINE . . . POWELL VALVES

. . . THE COMPLETE QUALITY LINE . . . POWELL VALVES . . . THE COMPLETE QUALITY LINE . . .

POWELL BRONZE VALVES

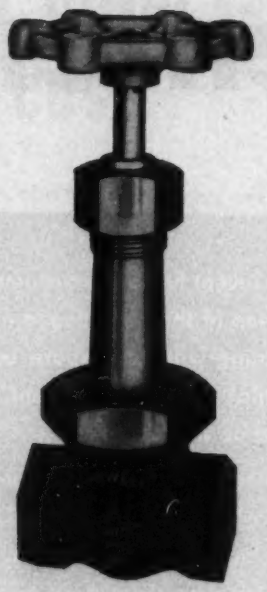


FIG. 375—Bronze "White Star" Gate Valve for 200 Pounds W.S.P.

FIG. 2608—Bronze "White Star" Full Flow Globe Valve for 200 Pounds W.P.

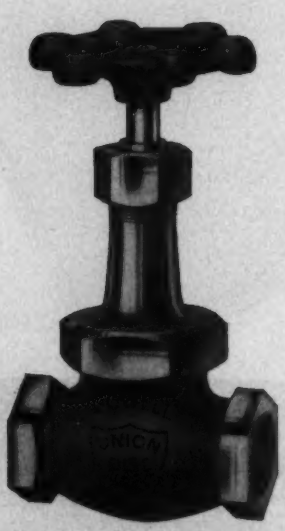


FIG. 150—Bronze "Union" Vulcanized Composition Disc Globe Valve for 150 Pounds W.S.P.

FIG. 560—Bronze Regrindable Horizontal Swing Check Valve for 200 Pounds W.S.P.

POWELL VALVES . . . THE COMPLETE QUALITY LINE . . . POWELL VALVES

Just name the bronze valve you need—Powell has it! For Powell probably makes more kinds of valves and has solved more valve problems than any other organization in the world.

Shown above are just a few Powell Bronze Valves. Investigate their many outstanding features...*and the complete line* of quality valves... in bronze, iron, steel and alloys... that have a proven record of long life and dependable service.

Consult your Powell Valve distributor. If none is near you, we'll be pleased to tell you about our complete line, and help solve any flow control problem you may have. Write...

The Wm. Powell Company, Cincinnati 22, Ohio..... 109th year

CURRENT COMMENTS

New uses and better papers... keeping abreast of the times . . . and tariffs

The paper and paperboard industries are beginning to realize that the great hope for a future expansion in demand lies in the packaging field. This is particularly true in the shipment of fruits and farm products and in the larger use of artistic packaging of food products for the grocer's shelf.

As 1954 came to a close it was more than ever evident that any failure of the industry to reach a materially higher production record was due to a slackening of demand for paperboard in the first six months. Paper output broke all records, and as the year ended the paperboard market was pushing toward a high level of demand and production.

Earnings were not proportionately as high in the board field as in paper, but firms specializing in the artistic packaging of foodstuffs were forging ahead to record profits and tonnage output. One company, for instance, recorded an increase of nearly $2,000,000 in net income for last year. The same ratio will be found in the earning figures for various firms that have been abreast of the times in meeting consumer demand.

The result of research

Two fields in particular have shown capacity for greatly expanded usage of paper and paperboard packaging: fruits and vegetables, and the specialized packaging required for frozen foods. Intensive research has been underway in many shipping fields, such as for onions, tomatoes, citrus fruits, and a host of other food articles.

The use of wet strength papers is another sign of the times. A thing of the past is the moist, fresh-from-the-refrigerator vegetable breaking through the housewife's shopping bag as she returns from market. Customer annoyance of this kind is fast disappearing as thoughtful grocers provide wet strength bags.

New uses — and better papers for present uses — are a possible answer to the question, How can the paper industry advance the use of its products?

Going nowhere fast

The General Agreement on Tariffs & Trade, now under consideration at an international conference in Geneva, Switzerland, seems to be going nowhere fast. Foreign nations blame this inaction on the United States, which in turn recognizes through its delegates that Congress will not approve any program that restricts its power to legislate on the exporting and subsidizing of agricultural products.

This was the international picture when on January 10 President Eisenhower sent to Congress his special message asking that he be given additional power to reduce U. S. tariff rates as a part of a program for expanded reciprocal trade agreements. He asked that Congress pass the legislation he was denied in the last Congress.

In the face of the fact that we have made the major concessions in the entire field of trade agreements, foreign nations are insisting that a strong GATT be pushed through Congress. The best that can be hoped for is a mere restatement of the old formula for international trading. The conference at Geneva is definitely in danger of bogging down. In addition to guarantees that Congress will make GATT agreements a matter of law, other nations demand concessions on such matters as subsidies and agreements to limit quotas on manufactured articles as well as agricultural products.

The GATT program proposes to prevent member governments from arbitrarily raising tariffs, imposing quotas — except as an urgent balance of payment conditions requires, using subsidies for exports, etc. It is difficult to believe that even a free-trade Congress would approve an agreement that would restrict its legislative power. Particularly would it be impossible to get through Congress an agreement that would bar that body from giving subsidies to facilitate exports of agricultural products.

Financial Reports

With stock market securities going to an all-time high, paper mill issues followed the general trend — but with considerable conservatism. So large a volume of such securities is now in the hands of institutional investors that these stocks are not subject to such wide fluctuations as is the case with more speculative issues. This is a high tribute to the solidarity of the paper industry.

Net Incomes

A. P. W. Products Co. Inc.—A net deficit of $25,647 is shown for the 39 weeks ended October 3, as against a deficit of $122,875 for the comparable 1953 period.

Champion Paper & Fibre Co.—Net income for the six months ended September 30 was $4,692,288, as compared with $5,115,548 a year ago.

Continental Diamond Fibre Co.—Net income for the nine months ended September 30 was $41,416, as compared with $686,732 for the same 1953 period.

Crown Zellerbach Corp.—Net income for the nine months ended October 31 was $15,523,050, aas compared with $13,218,768 for the same 1953 period.

Eastern Corp.—Net income for nine months ended September 30 was $611,783, as compared with $599,383 a year ago.

Gaylord Container Corp.—Net income for the first three quarters of 1954 was $5,189,492, as compared with $3,633,615 for the comparable 1953 period.

Great Northern Paper Co.—Net income for nine months ended September 30 was $2,859,389, as compared to $3,436,743 a year ago.

Hammermill Paper Co.—Net income for the first nine months was $909,483, as compared with $954,038 last year.

Hudson Pulp & Paper Corp.—Net income for the year ended August 31 was $2,312,314, as compared with $2,290,403 a year before.

International Paper Co.—Net nine-month income was $44,778,503, as compared to $42,976,489 in 1953.

Kalamazoo Vegetable Parchment Co.—Net income for the year ended September 30 was $2,202,489, as compared with $1,802,083 for the previous fiscal year.

Kimberly-Clark Corp.—Net income for three months ended October 31 was $2,-

Current comments . . .

998,308, as compared with $2,271,677 for the comparable 1953 period.

MacAndrews & Forbes Co.—Net nine-month income was $766,186, as compared to $759,159, a year ago.

Marathon Corp.—Net income for the year ended October 31 was $7,489,082, as compared with $5,844,726 for the previous fiscal year.

Masonite Corp.—Net earnings for the first three quarters were $3,607,338, as against $3,671,120 in 1953.

Mead Corp.—Net income for 40 weeks ended October 3 was $4,151,660, as against $3,885,181 for the comparable 1953 period.

Minnesota & Ontario Paper Co.—Net nine-month income was $4,321,065, as against $3,671,120 a year ago.

National Container Corp.—Net income for nine months ended September 30 was $2,403,094, as compared to $2,873,248 a year ago.

National Vulcanized Fibre Co.—Net nine-month income was $114,575, compared to $772,438, in the same months of 1953.

Nekoosa-Edwards Paper Co.—Net nine-month income was $1,600,000, as against $1,400,000 a year ago.

Oxford Paper Co.—Net nine-month income was $2,612,464, as compared to $2,012. 313 in 1953.

Dividend declarations

Robert Gair Co. Inc. has declared a 37½-cent dividend on the common, payable December 10 to holders of record November 19.

P. H. Glatfelter Co. has declared a dividend of 56¼ cents on the $50 par value 4½ per cent preferred and a dividend of 25 cents on the common, both payable November 1 to record of October 15.

International Paper Co. has declared a 5 per cent stock dividend on the common, an additional 75-cent dividend on the common, and the quarterly dividend of $1 on the cumulative $4 preferred, all payable December 16 to holders of record November 19.

Marathon Corp. has declared a common dividend of 30 cents, payable November 30 to record of November 5, and a preferred dividend of $1.25, payable January 3 to record of December 20.

National Container Corp. has declared the quarterly cash dividend of 15 cents on the common and the regular 31¼-cent dividend on the $1.25 convertible preferred, both payable December 10 to record of November 19.

Paper mill corporate changes

Doeskin Products Inc. is negotiating to purchase the entire control of Sitrue Inc. and its wholly owned subsidiaries, Superfine Paper Mills Inc. and Sterilek Co. Sitrue's products will continue to be marketed under present brand names.

Mead Corp. has filed a registration statement with the SEC for the issuance of 150,000 shares of $50 second preferred stock to meet part of the financing involved in the expansions of the past 10 years.

Nekoosa-Edwards Paper Co. has recommended to stockholders the adoption of a plan to increase the authorized capital stock from 350,000 shares of $25-par common to 1,000,000 shares of $10 par.

Oswego Falls Corp. has called for redemption the entire outstanding issue of second preferred convertible stock, effective December 15.

St. Regis Paper Co. has negotiated an agreement with Florida Oil & Gas Co. for the joint development of 10,000 acres of potential oil-bearing land in Santa Rosa County, Fla. The Texas Co. will pay 50 per cent of the costs of operation. Texas owns 5,000 acres of the land in question and has drilling rights on the 5,000 owned by St. Regis and Florida Oil & Gas.

Victoria Paper Mills Co. of Fulton, N. Y., has resumed operations after petitioning the United States District Court to allow time to meet the demands of creditors whose claims total more than $300,000 as against assets of more than $662,000.

Chemical Pulping Processes

Chemipulp's high degree of chemical, mechanical and physical control over materials and operations results in maximum plant output, high pulp quality, and low operating costs.

- Circulating Systems
- Chip Distributor
- Chip Pretreatment
- Waste-Liquor SO_2 Gas and Heat Recovery
- Stripping Towers
- Tail Gas Towers
- Hydroheater
- Spray-Type SO_2 Gas Cooling System
- Acid System (Bubble Absorption)

Chemipulp Process Inc.

Watertown, N. Y.

•

Associated with

Chemipulp Process Ltd., Crescent Bldg., Montreal, P. Q.

•

Pacific Coast Representative

A. H. Lundberg, Orpheum Bldg., Seattle 1, Wash.

Stock and Bond Quotations

New York Stock Exchange — Stocks

Closing Prices	Jan. 10, 1955	Dec. 10, 1954	Dec. 31, 1954
A.P.W.	5¾	5	3½
Celotex	29	27⅞	16½
Same Pref	*19-19¼	18½	16⅛
Certain-Teed	27⅛	24½	12⅝
Champion P & F	53⅝	54½	33½
Same Pref	*106-106⅝	104½	101
Chesapeake Corp.	*47½-48½	42	25¼
Container Corp.	63⅞	65⅝	44
Same Pref	105½	104¼	102
Continental Diamond	14⅝	13⅜	10⅝
Crown Zellerbach	59½	59⅛	35
Same Pref	104⅜	104⅛	101
Dixie Cup	54	59⅜	40
Eastern Corp.	23⅜	23½	15⅛
Robert Gair	30¼	28⅜	19¼
Gaylord Container	35⅛	23½	25¼
Great Northern	25⅜	69	54½
Hammermill	22⅞	23¼	12⅜
International	85¼	83⅛	56¼
Same Pref	*106-108½	105	101¼
Kimberly-Clark	38⅞	40⅝	40⅞ (old)
Same Pref	*152-156	157	106
MacAndrews & Forbes	51½	49	41⅝
Marathon	29	28⅜	19⅛
Masonite	27⅞	25⅝	16½
Mead Corp.	55¼	53⅝	26¼
Same Pref	103¼	101½	85
Same Sec Pref	*62-62¼	60¾	—
National Container	15⅝	14⅝	10¼
Same Pref	26⅜	25½	19⅛
Rayonier Inc.	61⅛	57⅛	25⅛
Same Pref	39	38	31¼
Scott Paper	59½	60½	61⅜ (old)
Same $3.40 Pref	96	96	91½
Same $4.00 Pref	*104-106	107½	107½
St. Regis	40¼	36⅞	20¼
Same Pref	103¾	103¼	94⅜
Sutherland Paper	48	46⅜	31½
Union Bag & Paper	70⅜	67½	44
United B & C	18¼	18	14½
United Wall Paper	3	1⅞	1¼
Same Pref	*18½-20⅞	16	15⅛
U.S. Gypsum	223½	222	118
Same Pref	180½	182⅝	175
West Virginia	39⅝	37½	24
Same Pref	108	108⅝	108¼

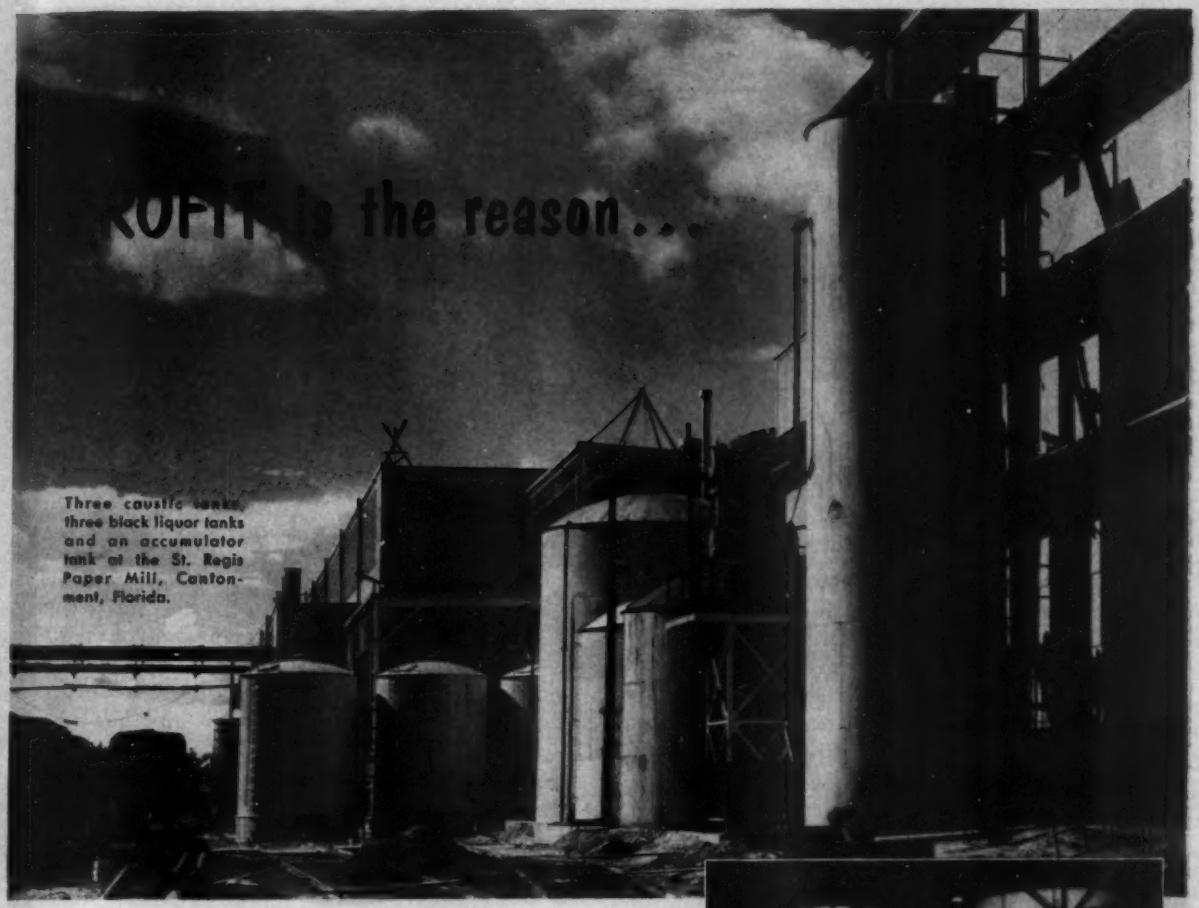
New York Stock Exchange — Bonds

Celotex 3¾%	100⅛	—	97¼
Champion P & F	101	—	96⅜
Mead Corp. 2%	90½	—	95

American Stock Exchange — Stocks

American Writing	16⅝	—	12¼
Brown Co. Common	15⅝	15	8⅞
Same $5 Pref	111½	108	89⅜
Same $3 Pref	53⅝	53¾	50½
Puget Sound	50	—	31

Closing Bid and Asked Prices.

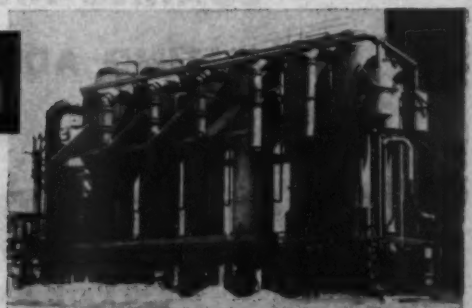


Three caustic tanks, three black liquor tanks and an accumulator tank at the St. Regis Paper Mill, Cantonment, Florida.

. . . for a paper mill's existence. To provide a mill with economical production in step with new processes calls for the best in tanks, evaporators, digesters and other steel plate structures. CB&I has the facilities to design, engineer, fabricate and erect to your requirements.

CB&I welded steel plate structures are a familiar sight throughout the paper industry . . . and for good reason . . . CB&I has built vessels and special plate work to meet the most exacting individual requirements for more than 60 years. Write our nearest office for further information. Estimates or quotations will be supplied upon request.

Above: Conkey Channel Switching Evaporator (Rosenblad Patents) operating on sulphite pulp mill waste liquors.



Conkey Sextuple Effect Evaporator, code construction throughout, operating on sulphate black liquor.

CB&I

Chicago Bridge & Iron Company

Atlanta • Birmingham • Boston • Chicago • Cleveland • Detroit • Houston
Los Angeles • New York • Philadelphia • Pittsburgh • Salt Lake City
San Francisco • Seattle • Tulsa • Washington
Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY and GREENVILLE, PA

Vanzyme discs

EASY TO
STACK AND HANDLE

STARCH CONVERTER

for

TUB AND CALENDER SIZING
COATING AND
LAMINATING ADHESIVES

Increase
ACCURACY
ECONOMY
EFFICIENCY
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R. T. VANDERBILT CO., Inc.

230 Park Avenue, New York 17, N. Y.

The Paper Industry

February 1955

A new approach needed to international trade problems

FOCUSING ON PROBLEMS of foreign trade and tariffs, R. M. Fowler, president of the Canadian Pulp and Paper Association, called for "a new approach, an attitude of mind, a recognition of the common interest and sense of identity between all elements of our community and with like-minded people in other friendly nations" at the annual 1955 meeting of the CPPA.

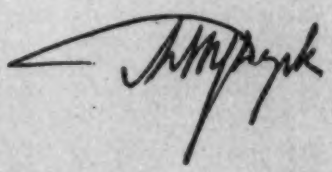
Mr. Fowler suggested that the needed expansion of trade, in a wise and cooperative way, between the U. S. A. and Canada not be viewed as a problem which is the responsibility of the respective governments alone, but that both "industry and industrial organizations of the two countries sit down together to determine the facts and lay the ghost of past controversies."

Few will take exception to these constructive suggestions. While the indiscriminate criticism of the U. S. tariff structure so frequently voiced in Canada and, on the other hand, the equally indiscriminate insistance on existing or even higher tariffs by some segments of the U. S. industry are based largely on bias and failure to see the over-all balance sheet, there is evidence in both countries of an increasingly more rational approach to this difficult problem.

Men with foresight and keen business perception are realizing that the question of tariffs has to be tackled on the basis of an over-all appraisal of all factors that determine the national productivity patterns and the trade relations of the two countries. It is neither realistic nor reasonable to expect the U. S. A. to open its borders to a free entry of goods and at the same time restrict the flow of certain specified goods in the other direction. The Canadian argument that such a pattern of trade is required to bring into better balance the export-import picture between the two countries is neither decisive nor particularly fruitful.

A much more constructive approach would be to focus attention on possible mutual benefits that would fall to two trading nations as a result of a freer flow of goods in either direction. Many economic experts assure us that such benefits — both material and intangible — are of considerable magnitude and that they often preponderately act to the advantage of the nation possessing a higher production capacity.

Let us therefore explore, examine, identify, and evaluate these benefits. And what better way to do so than by following Mr. Fowler's suggestion and have industries and industrial organizations in our two countries sit down together and determine the facts. It is in this manner only that the ghosts — if ghosts they are — of past trade disputes will be buried and the economies of the two nations better integrated for our mutual benefit.



Aerial view of Buckeye Cellulose Corporation's Foley Florida mill

Buckeye Cellulose Mill —an ultra modern operation

W. F. Bowld
Vice President and
General Manager

Otto Alderks
Manager, Technical
Development

P. K. Honey
Manager, Florida
Operations

▸ Open construction and ground-level digester control are among the innovations introduced in this $25,000,000 mill.

▸ A two-stage digester process is used, i.e., acid hydrolysis to remove sugars followed by cooking with "sulfate" liquor.

FOLLOWING A YEAR of survey operations in the Southwest and in Canada, Buckeye Cellulose Corp. acquired a tract of 125,000 acres of sandy soil and pinewoods in Florida in 1951. Later that year 440,000 additional acres were purchased from Brooks Scanlon Lumber Co., and soon after this the plant site was selected at Foley. Construction of the plant began in February 1952, and the first finished product was turned out in June 1954.

The plant fills a definite national need, since during the past 15 years usage of dissolving cellulose pulp by the rayon, plastics, photographic film, cellophane, and other industries has increased more than 350 per cent.

Description of the mill

The Foley plant is not a northern mill moved south. It is largely free of wall enclosure. Pipe lines, power units, conveyor belts, tanks—in fact, practically everything with the exception of electrical control panels is located out-of-doors.

Largest of the four main plant buildings is a 688-ft. long two-story machine room which houses the main 185-in. wide pulp-drying machine, or fourdrinier.

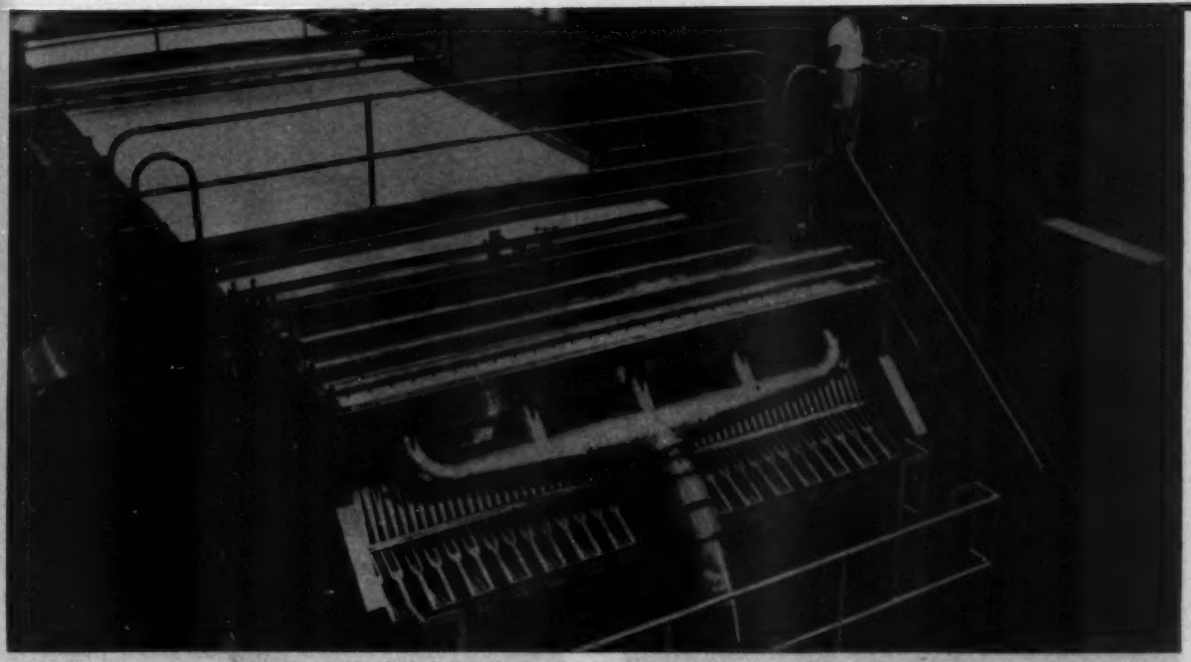
The dryer drainage system is divided into three main control sections: the pre-dryers, the main dryer section, and the section following the breaker stack. A cascading arrangement assures maximum steam economy and proper drainage under all operating conditions. Five receivers collect the condensate for return to the boiler house, and a vacuum pump and a cooler provide for the extraction of non-condensible gases.

The plant will operate continuously on three shifts seven days a week. It will grind around 750 cords of 5-ft. pine logs every 24 hours to turn out some 300 tons of pulp daily.

Some 26 million gallons of water are required by the plant each day, supplied by three artesian wells more than 200 ft. deep.

For boiler feed make-up and general process uses the water is pumped through 15 pressure filters.

The power plant supplies 15,000 kw of electricity per hour. Oil is the principal fuel, but the bark stripped off the logs, as well as other combustible residues of the processing, is also burned. All steam at the mill, which is generated at 600 psi, is run through turbo-generators to supply all electric power



185-inch wide Sandy Hill fourdrinier, showing flow distributor and pressure head box

before being reduced to the pressure used in the process.

Construction problems were enormous. Underground mains vary from 4-in. to 42-in. cast iron. Above ground, the acids and other corrosive liquids used called for a network of many kinds of unusual process piping. In addition to 82,000 lineal ft. of copper tubing and 16,000 ft. of stainless steel piping, there were installed saran, rubber, and lead-lined pipe. The basic piping needs called for 4,180,000 lb. of various sizes of carbon steel pipe.

Nearly 50 miles of utility conduit and more than 800 electric motors were installed.

Plant personnel

Buckeye operations at Foley will be under the direction of W. F. Bowld, vice president and general manager of Buckeye Cellulose. Paul Honey is manager of Florida operations, and Gil Tougas is plant superintendent. William Smith is chief forester. Manager of the technical section is Otto H. Alderks, whose headquarters is in Memphis. Marshal Courtney is manager of wood procurement. Bill Timmons and Sam Register are in charge of industrial relations and public relations respectively.

The plant will employ approximately 500 people — 350 production workers and 150 in related jobs.

The product — 3 types of pulp

The Foley plant is equipped to produce three main types of cellulose pulp, differing in chemical characteristics:

(a) Viscose Grade — used principally in tire cords, textiles, and cellophane.

(b) Acetate Grade — for plastic and film.

(c) Paper Grade — for making quality papers.

The process

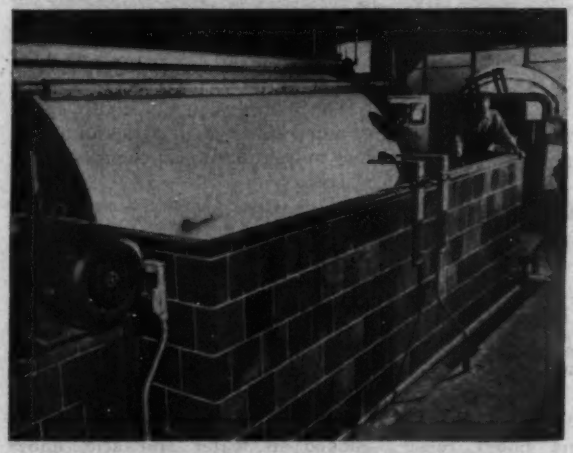
Uniform $\frac{3}{8}$-in. chips are first cooked in water and acid under pressure to remove sugar. Then the chips are cooked again under pressure for two to three hours with "cooking liquor." After this second "cook" the fibers are blown into

Combustion Engineering recovery boiler, claimed to be the largest in this country, is shown at the center

View of battery of Vortraps supplied by Nichols Engineering & Research Corp.

Honeywell digester control panels are located on the ground floor of the digester building

Portion of the special temporary storage space that can hold three days' production



Washer installation in the Sandy Hill Kamyr bleach system

Thoroughly tested cellulose pulp bales reach the packing room

Pneumatic tube system connects the quality control laboratory with the critical steps of manufacturing

Quality control stations are also located on the operating floor

blow towers, then washed and screened.

Bleaching is carried out in a continuous bleaching process, developed and perfected by Buckeye.

A Thymotrol-operated controlled volume pump, equipped with a dc tachometer generator unit and indicating voltmeter calibrated in pump strokes per minute, is used in bleach liquor preparation. Before going to the paper machine, the pulp is further refined in wet cyclones to remove the last traces of impurities.

By-products include an unusually pure grade of turpentine and tall oil. The latter, a resin-fatty acid complex used for the production of some soaps, is now usually split into fatty acids and resin for chemical uses.

Flue gases pass through a wet-bottom type precipitator of 130,000 cfm capacity and 95 per cent cleaning efficiency.

Cleaned flue gases are pumped by a rotary positive displacement gas pump, rated at 24,000 SCFH against 6.5 psig, through lime-softened water for recarbonation purposes.

Quality control — all the way

Quality control begins as the logs leave the barking drums. A special crew checks each lot, making sure that every bit of bark, knots, impurities, and outsized logs are removed.

The main laboratory, with a staff of 22 chemists and technicians, is the nerve center of the plant. It handles all routine control analyses and performs product testing. The laboratory is connected to the bleach plant, more than 200 ft. away, by a pneumatic tube system similar to those used in department stores. Samples and results of the analyses are transferred back and forth in a matter of minutes. This procedure makes controls nearly instantaneous.

The plant also maintains secondary control laboratories right in the bleach plant. There is a chemist to perform routine titrations in one corner of the machine room and make any necessary on-the-spot adjustments of processing conditions.

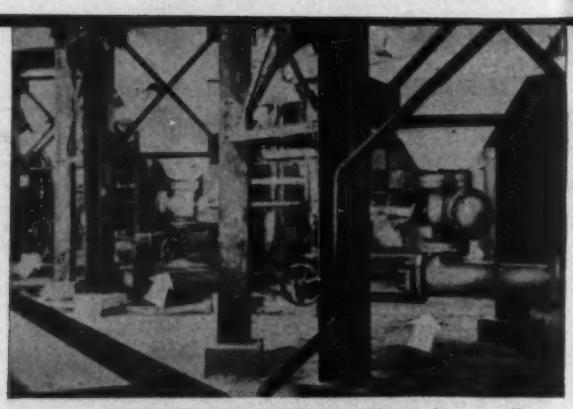
No shipments are made until samples of every 10-ton roll of paper are completely checked against customers' specifications. A special temporary storage space is provided at the end of the paper machine. It is big enough to hold three days' production and is a guarantee that all production will be checked and will meet specifications before being loaded into railroad cars.

Principal equipment and suppliers of the Foley Mill

Air-system	J. O. Ross Engineering Corp.
Airveyors	Fuller Co.
Baling press	Washington Iron Works
Barking drums	Fibre Making Processes Inc.
Beater (laboratory type)	Valley Iron Works
Bleach plant	Sandy Hill Iron & Brass Works
Bleaching tanks	Stebbins Engineering & Mfg. Co.
Blow valves (automatic)	Yarnall-Waring Co.
Boilers (600 psi)	Babcock & Wilcox Co.
Boiler (recovery)	Combustion Engineering Inc.
Boiler control system	Bailey Meter Co.
Broke disintegrator	E. D. Jones & Sons Co.
Cascade disk evaporator	D. J. Murray Mfg. Co.
Causticizing plant	Dorr-Oliver Inc.
Chains ("H"-type)	Link-Belt Co.
Chippers	Carthage Machine Co.
Circular knife grinders	Samuel C. Rogers & Co. Inc.
Consistency regulator	DeZurik Shower Co.
Controlled volume pump (Thymotrol)	Milton Roy Co.
Crane (overhead)	Manning, Maxwell & Moore, Inc.
Deckers (valveless)	Improved Machinery Inc.
De-knotter screens	Bird Machine Co.
Digesters (stainless clad)	Graver Tank & Mfg. Co.
Disposal unit	Ross Midwest Fulton Corp.
Evaporator (Conkey 6-effect)	Chicago Bridge & Iron Co.
Evaporator instruments and recorder	Minneapolis-Honeywell Regulator Co.
Fan Pump	Buffalo Pumps Inc.
Feed water heaters (high-pressure)	Kewanee-Ross Corp.
Felts	Albany Felt Co.
Finishing equipment (automatic)	Lambs Gray Harbor Co.
Flat screens	Bird Machine Co.
Flow distributor (Bertram)	Sandy Hill Iron & Brass Works
Flow meter (Ratosleeve bleach stock)	Fischer & Porter Co.
Fork trucks (2,000-lb. electric)	Yale & Towne Mfg. Co.
Fourdrinier	Sandy Hill Iron & Brass Works
Gas pump (24,000-SCFG positive displacement)	Roots-Connersville Blower Corp.
Head box (pressure)	Sandy Hill Iron & Brass Works
Head box control valve regulator	DeZurik Shower Co.
Heat exchangers (type "BCF")	Kewanee-Ross Corp.
Heat exchanger	Whitlock Mfg. Co.
High voltage controls and unit substations	Allis-Chalmers Mfg. Co.
Hogs (flat face sectional cylinder)	Mitts & Merrill Co.
Instruments	Bailey Meter Co., Foxboro Co., Minneapolis Honeywell Regulator Co., Taylor Instrument Companies
Insulation (boiler and pipe)	Johns-Manville
Jordans	E. D. Jones & Sons Co.
Knife grinder	Hanchett Mfg. Co.
Machine drive	Sandy Hill Iron & Brass Works
Machine hood	J. O. Ross Engineering Corp.
Machine instrumentation	Mason-Neilan Regulator Co.
Motors (electric)	Westinghouse Electric Corp.
Panel instruments	Foxboro Co.
Piping (corrosion resistant stainless steel)	Ladish Co., Tri-Clover Div.
Precipitator (wet bottom type)	Research-Cottrell Inc.
Pressure filters (3300-GPM)	Permutit Co.
Pressure filters	Infilco Inc.
Pulp dryer	J. O. Ross Engineering Corp.
Pumps	Worthington Corp.
Pumps (chemical proportioning)	Hills-McCanna Co.
Pumps (vertical turbine 6300-GPM)	Layne & Bowler Inc.
Push button-controlled systems for boilers	Diamond Power Specialty Corp.
Refiners (Jones)	E. D. Jones & Sons Co.
Screen room equipment	Orville Simpson Co.
Soot blower system for boiler	Diamond Power Specialty Corp.
Strainers and support plugs	Electric Steel Foundry Co.
Switch gear	Westinghouse Electric Corp.
Tile silos	Stebbins Engineering & Mfg. Co.
Turbines (for various pumps)	Elliott Co.
Turbo-generator	General Electric Co.
Vacuum pumps	Nash Engineering Co.
Valves (gate, globe and check)	Wm. Powell Co.
Valve (Ratosleeve stock control)	Fischer & Porter Co.
Valves (Saunders patent diaphragm)	Hills-McCanna Co.
Vibrator screens	Bird Machine Co.
Vortraps	Nichols Engineering & Research Corp.
Washers (stainless steel)	Improved Machinery Inc.
Wood hog (250-hp, 900-rpm motor)	Diamond Iron Works

Better service from digester blow valves

EDWARD E. FINSEL and FRANK PTACEK*
Yarnall-Waring Co.



Six 8-in. seatless sliding-plunger digester blow valves installed at Coosa River Newsprint Co., Coosa Pines, Ala.

▶ Selecting the right blow valve results in improved digester operation and increased pulp output. It prevents loss of cooking liquor, over-cooking and blow-pit accidents

CHOOSING THE RIGHT blow valve for pulp digesters prevents overcooking, loss of pulping capacity, blow-pit accidents and similar troubles. Valves that stay liquor-tight insure freedom from burned chips and concentration of chips in the digester. Blows are quick, clean and free with a minimum of maintenance, and maximum protection for operating personnel. Valves that do not seal tightly during cooking, or that require extensive maintenance, can cause liquor losses, high repair costs and marked reductions in plant output.

Types of blow valves

There are four broad classifications for blow valves in use today: (1) ball, (2) cock, (3) disc, and (4) seatless sliding-plunger type.

Fig. 1 shows the construction of a typical venturi ball valve. Designs of this type are built to give tight shutoff, low pressure drop, non-turbulent flow and easy operation.

A plug or modified spherical type valve is shown in Fig. 2. Advantages cited for valves of this design include (1) protection of machined surfaces from erosion or corrosion while valve is open, (2) only a small area is exposed to the action of the fluid while the valve is closed, and (3) the shearing action of the plug during the period it is in motion wipes scale or foreign matter off the exterior of the plug. Smooth passages in the valve prevent accumulation of sediment and scale.

Disc-type valves, Fig. 3, are of various designs. The one shown has a door for easy inspection of valve seat and adjustment of packing before each cook.

Seatless sliding-plunger valves, Fig. 4, are designed to insure tight closure under full digester pressure. They effectively seal off the digester to prevent loss of cooking liquor and insure thorough cooking of the pulp. Free discharge is always obtained because the hollow sliding plunger has no pockets where wood chips or tramp materials (such as nails, bullets and scrap metal) may hang up. Full pipe area permits discharge with minimum pressure. Digester blows quickly and cleanly.

Materials used in this design, Table I, resist corrosive and erosive action of cooking liquors. Heavy-duty body and yoke easily withstand the shocks encountered in digester installations.

Packing rings are long-fiber asbestos and graphite with part neoprene binder. The rings are factory molded under high pressure and temperature. Monel reinforcing inserts for the lower packing ring give longer wear. A stainless steel compression ring under the lower packing ring insures greater body life. Valves of this design need no washing out nor replacement of gaskets after each blow. The valve operating unit is completely enclosed.

How to choose blow valves

A number of factors must be considered when choosing type and size of blow valve. These are: (1) digester type, (2) size of digester outlet, (3) materials to be handled, and (4) type of operation preferred for the valve.

In general, digester capacity (cubic contents) and allowable blow time (usually 15 minutes, or less) fix outlet size. This, in turn, determines valve size. It is the responsibility of the designer of the digester to select an outlet size suitable for the anticipated capacity, blow-line length, blow time and digester pressure. Type of pulp to be cooked in the digester may also influence outlet size.

General practice today is to choose a blow valve of the same size as the digester outlet. This insures free flow during blow down and reduces wear of valve parts to a minimum. Standard outlet and valve sizes in use today are 4, 6, 8 and 10 in. in diameter, with 8 in. being the predominant size.

The characteristics of the pulp influence valve materials. Erosion and corrosion of valve parts can be a serious problem in any mill. Shock during blow down can lead to troublesome leaks if valve materials cannot safely withstand impact loading. Since not all valve designs are available with parts of alternate materials, it is wise to study plant experience with different materials to see which have proven to have the longest life under actual operating conditions.

As a general rule, and for certain specific parts, plain and alloy steels, monel, stainless steel and precipitation-hardened tubing have the longest life in digester service. One mill superintendent expressed his blow valve needs as "a husky, beefy valve of good design that will last a long time with a minimum of maintenance." Many of these characteristics are obtained by choosing suitable materials for the valve.

To date, flanged 300-lb. American Standards Association (ASA) standard valve connections have been used for pulp digesters. Welded connections between the digester, blow valve and blow line are not used

*Mechanical engineers for Yarnall-Waring Co.

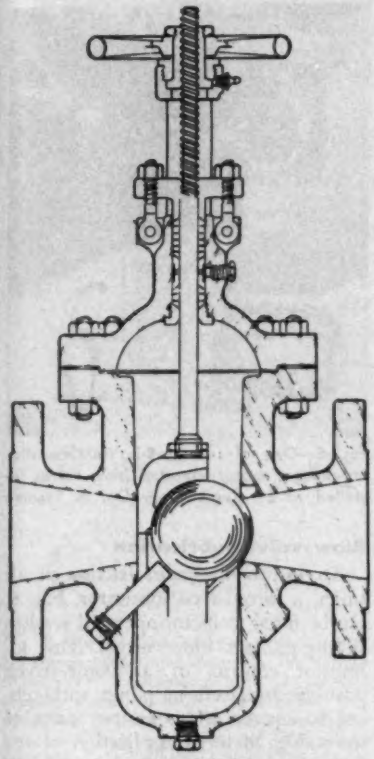


Fig. 1—Venturi ball valves are designed to give tight shut-off, low-pressure drop, non-turbulent flow, and easy operation

because they complicate valve removal for maintenance, repair or replacement.

The final factor in valve choice is the type of operation to be used — manual, remote push button, or remote hydraulic control valve. Though many older mills still cling to manual operation of blow valves, modern practice prefers remote push button control from the charging floor. Remote control eliminates manual operation of the valve and materially reduces supervision of the blowing operation, releasing workers for other duties. Fast, remote operation of blow valves pays big dividends; in one large mill, output was increased by 20 tons of pulp per day after changing from manual to remote-controlled valves. Production gains of this magnitude easily justify the extra cost of remote controls.

Though production is always a prime consideration in valve operation, personnel safety cannot be overlooked. Remote control keeps the operator at a safe distance from the valve during the blow period, lessening the danger should there be a failure. The walls poorly designed and applied blow valves have been found to be almost paper-thin after long use. Sudden shock or excessive pressure can lead to costly failures of valves in this condition.

Two types of operators for remote operation are available as standard equipment on seatless sliding-plunger valves, Fig. 4. One is motor-driven, the other is hydraulically operated.

Valve operators

Seatless sliding-plunger motor-operated valves, Fig. 5, are fitted with a special high-torque electric motor driving a reduction gear train. A worm drives a worm gear splined to the yoke nut on the valve stem. When the valve plunger reaches the closed position, thrust on the stem causes the yoke nut to slide along a spline, compressing heavy coil springs until an adjustable thrust cut-off switch is opened, stopping the motor.

When the required seating thrust for full closure and drop-tight compression of the packing rings is

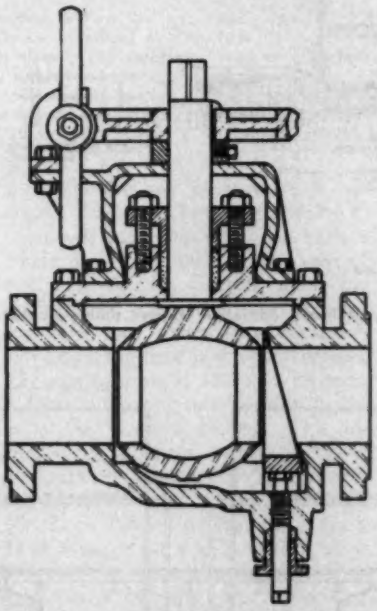


Fig. 2—Plug type valves are said to have high corrosion and erosion resistance and smooth flow passage for the liquid

reached, plunger travel stops; however, the compression load in the motor unit retains pressure on the packing, maintaining a tight seal as long as the valve is closed. If a serious obstruction (tramp iron or some other foreign matter) is met while the plunger is closing, the thrust switch stops the motor and protects the valve from damage. The handwheel, though normally disengaged from the valve, may be used for emergency manual operation by moving the spring return engagement level, which automatically opens electrical contacts for safe operation of the valve.

Fig. 6 shows the details of the hydraulic oil control circuit for remote operation of a seatless sliding-plunger valve. Either oil or water may be used in the hydraulic circuit, but oil is preferred because there is less corrosion of valve parts, cylinder size can be smaller and there is no danger from a failure of the mill water supply system. However, where the water supply is assured at all times, this working medium is practical.

The hydraulic operator in Fig. 6 is fitted with a double-acting cylinder supplied with oil at 750 to 850 psi from a motor-driven pump equipped with a pressure-relief valve. Pressure is regulated by controlling the pump motor with a pressure switch. The oil furnishes the actuating force for quick opening and closing of the valve. Flow of oil to the cylinder is controlled by a manually-operated four-way reversing valve.

Auxiliaries include an accumulator, pressure gage, pressure relief valve, speed control and check valves, and four-way reversing valve. The hydraulic cylinder is easily attached to the seatless sliding-plunger valve by means of a plunger-head adapter. Fig. 7 shows a typical piping arrangement for multiple hydraulic operation of these valves.

Both motor and hydraulically operated valves of this type are usually fitted with remote indicators to show if valve is open or closed. Hydraulically operated valves have a hand pump for emergency closure of the valve.

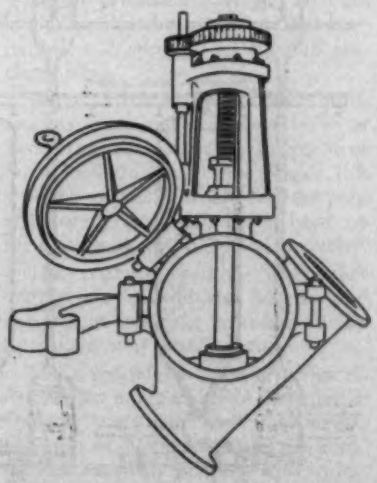


Fig. 3—Disc type valves are of various designs. This one has a door for inspection of valve seat and adjustment of packing

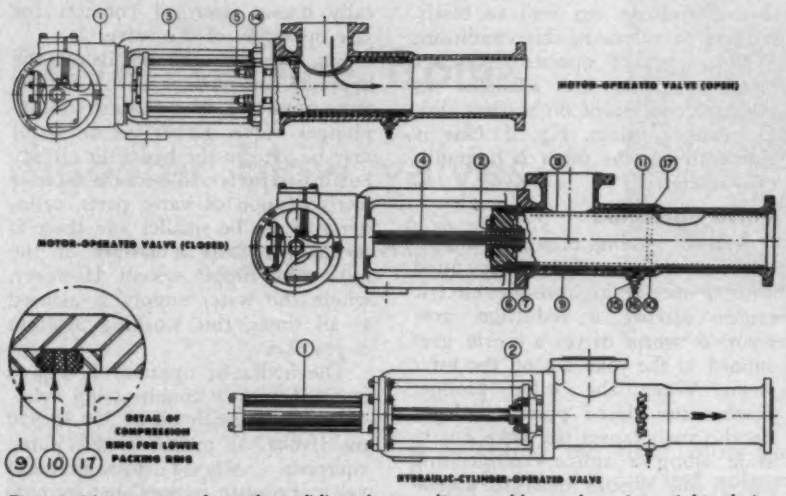

MOTOR-OPERATED VALVE (OPEN)
MOTOR-OPERATED VALVE (CLOSED)
DETAIL OF COMPRESSION RING FOR LOWER PACKING RING
HYDRAULIC-CYLINDER-OPERATED VALVE

Fig. 4—Motor-operated seatless sliding-plunger digester blow valve gives tight closing at all times. Discharge is free, quick and easy, without shocks

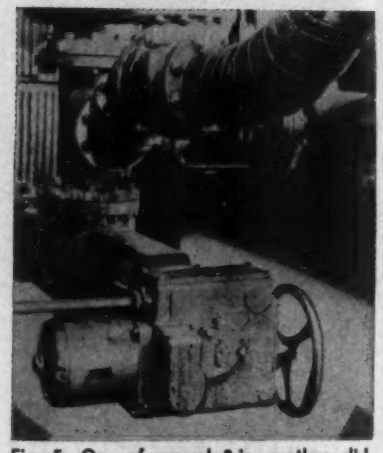


Fig. 5—One of several 8-in. seatless sliding-plunger motor-operated blow valves installed at St. Regis Paper Co. in Tacoma

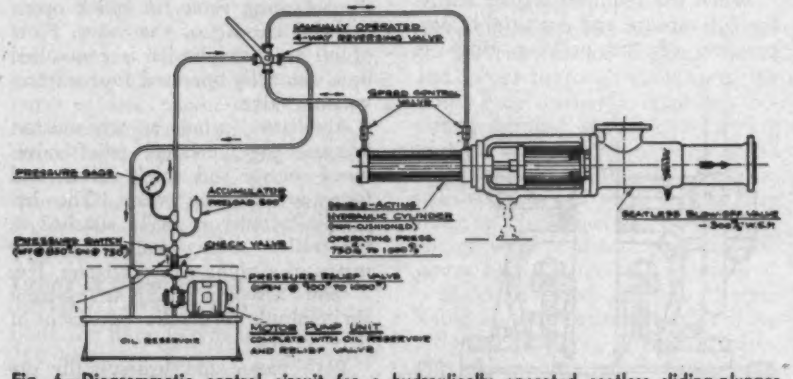


Fig. 6—Diagrammatic control circuit for a hydraulically operated seatless sliding-plunger digester blow valve

Blow-valve lubrication

To insure minimum friction at all times, a forced-feed lubricator, Fig. 8, can be fitted to motor-operated seatless sliding-plunger blow valves. This lubricator consists of a motor-driven positive displacement pump with tubing to convey oil to various parts of the valve. Metered application of the lubricant is certain and positive at all times, with no danger of over- or under-lubrication of the important operating parts — the lower packing, the plunger-head bushing and the outside diameter of the valve plunger. The motor driving the lube-oil pump runs each time the blow valve is opened or closed. Hydraulically op-

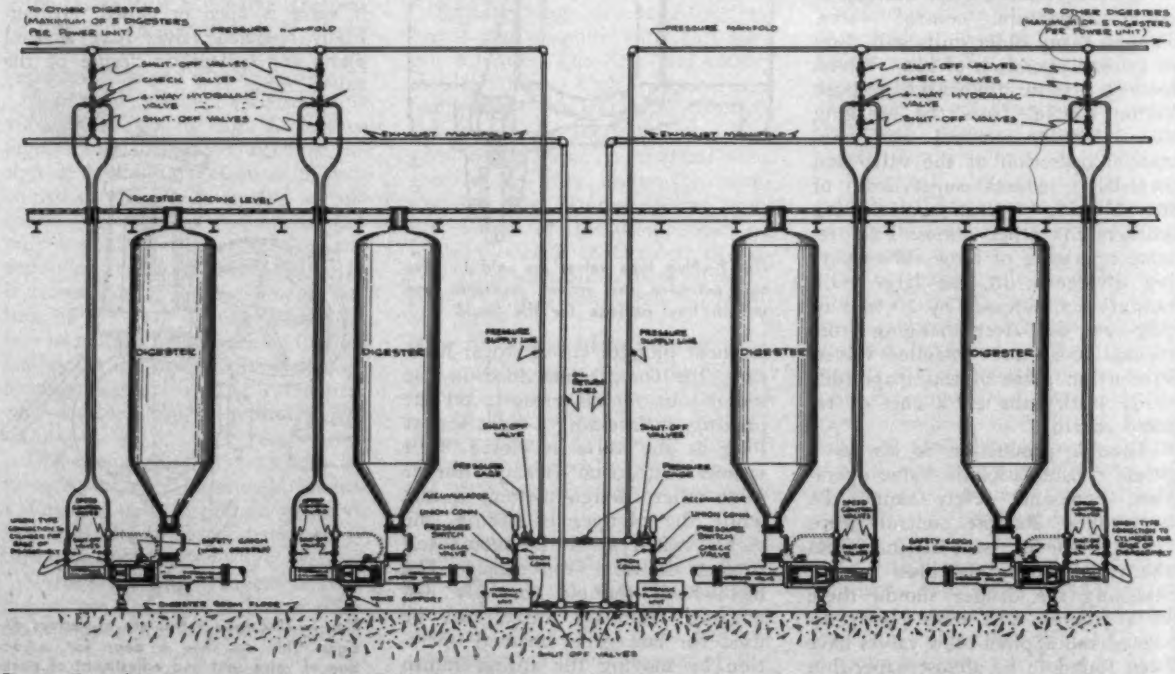


Fig. 7—Typical piping arrangement for multiple hydraulic operation of seatless sliding-plunger digester blow valves

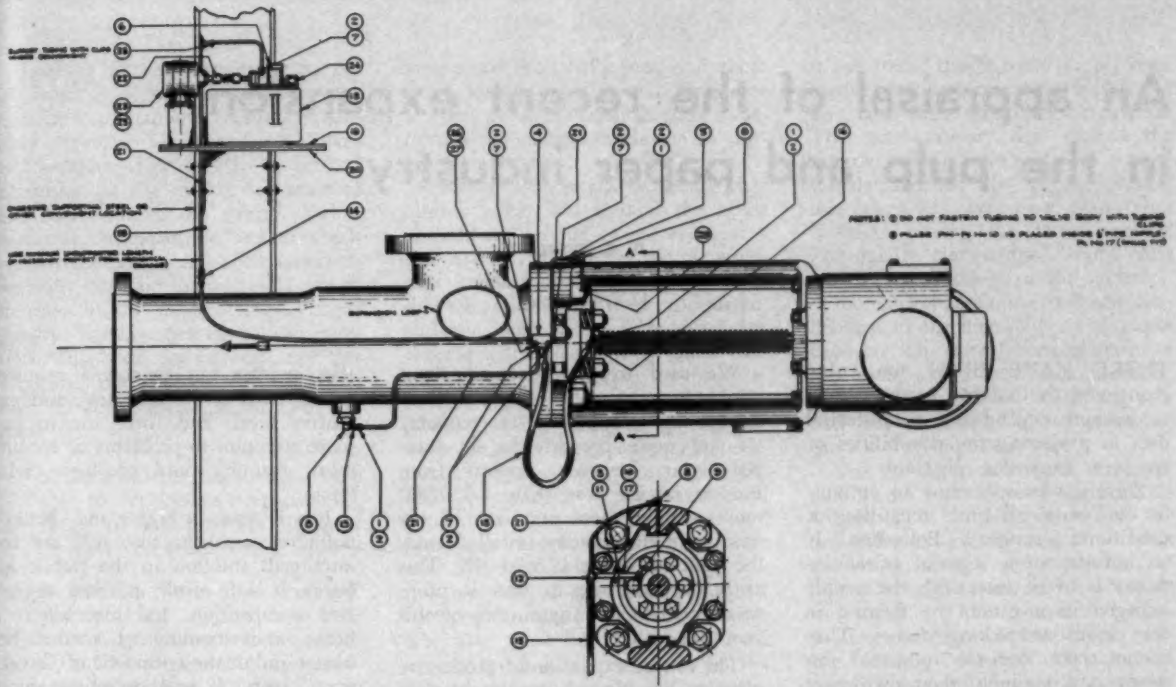


Fig. 8—Forced-feed lubricator for a motor-operated seatless sliding-plunger digester blow valve. The various parts are identified as follows: (1) compression nut; (2) compression sleeve; (3) self-tapping screws, #10-24; (4) junction, four-way single; (5) meter unit, type "F"; (6) oil specification plate; (7) compression bushing; (8) elbow connector, 90°; (9) elbow connector, 30°; (10) filler pin; (11) ⅛-in. pipe strap; (12) ⅛-in. 90° elbow; (13) meter unit, type "F"; (14) coupling; (15) hose assembly; (16) meter unit, type "F"; (17) ⅛-in. pipe nipple; (18) lubricator reservoir assembly; (19) lubricator base; (20) lubricator shelf; (21) 5/32-in. O. D. x .020-in. wall stl. tubing; (22) H. A. thrush spring coupling; (23) 1/20-hp Westinghouse motor; (24) lubricator unit; (25) C-H two-pole contactor; (26) ¼-in. socket HD cap screws; (27) ¼-in. lockwashers; (28) tubing clips, and (29) drip sleeve

erated valves are similarly lubricated manually by a "one-shot" type lubricator.

Installation and operation

Seatless sliding-plunger blow valves are connected to the bottom outlet of the digester, Fig 7. The discharge end of the valve connects to a pipe leading to the blow tank. A cleanout fitting (cross or tee) is recommended between the bottom flange of the digester and the inlet flange of the valve. This permits easier inspection of the valve and removal of foreign matter should it enter from the digester.

Today, many mills install magnetic separators ahead of the digester to remove loose metallic materials in the charge. The separators protect the digester and other equipment in the line of flow.

For proper support of the complete valve, a flanged pipe column should be installed under the pad provided on the valve yoke near the drive unit, Fig. 7. However, other methods of valve support may be used. Best operation of the valve is obtained with an adjustable spring-mounted type of yoke support because it absorbs the vibration and expansion and contraction caused by the wide temperature ranges and loading in the digester.

In some mills for added safety, digester-room personnel is warned by a whistle, bell, gong, or other audible signal before any blow valve is operated. Time required for the valve to open will vary, depending on various conditions in the mill. In the case of one 2700-cu. ft. digester producing eight tons of pulp when loosely packed and nine tons when densely packed, valve opening time is 9 to 10 seconds. The closing time is 12 to 13 seconds.

Overall blowing time for this digester is 13.75 to 16 minutes. This includes the time to open the valve, discharge the contents of the digester, and close the valve. Pulp at this mill (St. Regis Paper Co., Pensacola, Fla.) flows through an 8-in. line to a blow tank 400 ft. from the digester. This produces a blowing time somewhat longer than usual. Chip density is 15 to 20 per cent greater than that used in other mills, giving a production rate equivalent to that of a 3250-cu. ft. digester. A series of lights informs the cook in this mill of the exact status of valve operation.

Blow valve care

Seatless sliding-plunger valves require little operating care other than routine inspection and minor adjustments during shut down of the digester. Where manual lubrication is used, it is common practice to lubricate the valve stem and motor unit while the digester is out of service. Once a year, the packing can be replaced, if necessary. This insures having a tight valve at all times. However, seatless sliding-plunger valves can and do operate for considerably longer periods without packing replacement or adjustment.

Many mills keep a complete spare blow valve and a few spare parts on hand for "production insurance." Should any valve need shop inspection or overhaul, the spare valve is put into service while the other is in the shop. This procedure prevents loss of valuable production time while a valve is being overhauled. When facilities are available, the valve can be overhauled and checked in the mill machine shop.

As a safety measure, some mills remove every digester blow valve at two-year intervals for measurement of body shell thickness. A check of this type shows exactly what effect the pulp and foreign materials in it have on the important components of the valve.

The plunger, packing and other sealing parts should also be inspected at the same intervals, because scratches or grooves may permit leaks.

These procedures have given excellent results in a number of large mills. One in particular, the Jacksonville, Fla. mill of National Container Corp. reports excellent service with minimum maintenance when using seatless sliding-plunger blow valves that are regularly inspected and overhauled at the recommended intervals.

An appraisal of the recent expansion in the pulp and paper industry*

D. C. EVEREST
Chairman of the Board
Marathon Corp.

THERE HAVE BEEN too many changes in the last two or three years to warrant dependence on historical data in projecting the possibilities of any new expansion program.

Anyone who maintains an optimistic outlook at all times regardless of conditions is simply a "Pollyanna." If an industry or a segment of an industry is to be successful, the people engaged in it cannot be floating in the clouds or picking daisies. They cannot take over-all industrial indexes as a guide to their own most remunerative future action. This is an era of analysis — and a mighty careful analysis at that, coupled with all the imagination and perception one can muster if he is to consider a new expansion program or a revamping of existing facilities.

Let us examine the situation on an over-all basis as it appears today.

As we approach the end of the greatest expansion cycle in the long history of the pulp and paper industry, it is an appropriate time to look at the record and consider the outlook.

The domestic wood pulp industry has tripled its productive capacity in the past 20 years. Since the end of World War II, pulp capacity in the United States has increased at an averaged rate of 1,000,000 tons a year — from 12,000,000 tons to about 22,000,000 tons. About half of this 10,000,000-ton capacity increase is in 32 new mills built since 1946; the other half has resulted from improvements and additions to existing facilities.

Ten million tons of new postwar capacity represents a lot of pulp. It is, for example, more pulp than Canada has ever produced in any single calendar year. It is more pulp, by almost 50 per cent, than the entire Scandinavian industry produced in its best postwar year. And it is more pulp, by 52 per cent, than the United States produced in its most favorable prewar year.

*Extracted from a paper presented at the January 13, 1955, joint meeting of the Kalamazoo Valley Section of Tappi and the Michigan Division of the Superintendents Association.

We used to be concerned about the impact of pulp imports from Europe upon our domestic economy — and quite properly so. In their peak year, however, imports from Europe totaled less than 1,750,000 tons — only about one-sixth of the new domestic capacity installed since the end of World War II. This arithmetic may help to place in proper perspective the significance of this postwar growth.

The rate of expansion of productive capacity has slowed down, although there are several large mills in course of construction both in the United States and Canada. Work of rehabilitation of existing facilities, of course, still goes on. Personally, I think this slowing down is a good thing. It will afford domestic pulp and paper producers an opportunity to review their current position, consolidate their gains and give more studied attention to the future.

Effects of expansion

An expansion cycle of the magnitude of the one that we have just been through, obviously, has solved many problems for many people.

In combination with an expansion of somewhat lesser magnitude in Canada, it has for the time being eliminated fear of pulp and paper shortages in North America. It has reduced the United States' dependence upon overseas fiber supply sources. It has guaranteed long-range continental self-sufficiency in fiber and fiber products. It has resulted in greater product diversification. It has furthered our national security by solving problems of those concerned with matters of national defense. In these respects, expansion has accomplished what it was intended to accomplished.

But expansion also creates problems — technical, economic and social. Increased production will result in increased requirements of wood, water, power and chemicals; individually and collectively, we must devote more attention to the short- and long-range problems incident to raw material procurement. Expansion will also increase our personnel requirements, both at the operating and executive level, and force use to pay more attention to problems of recruitment, training, and employee relations.

It will result in bigger and "better" pollution problems that will cry for intelligent solution in the public interest. It will result in more aggressive competition and necessitate a better understanding of market behavior and of the arithmetic of "break-even" costs. It will necessitate more intensive study of the possibility of further end-product and by-product development. And it will require more careful market research to insure that any new expansion is realistically geared to prospective requirements for the future, and not blindly geared to the growth rate of the recent past.

The growth rate

Two factors determine the rate of growth for woodpulp:

1. The growth rate for the end-products of fiber, and

2. The relative importance of wood pulp in the over-all fiber furnish of these end-products.

Let us examine these factors as they have operated in our pulp and paper economy in the recent past, and as they may be expected to operate in the period ahead.

End-product requirements

In the postwar period (1945-1953), domestic consumption of paper and paperboard has increased 11,500,000 tons, or 59 per cent. Of this total increase, only one-fourth was attributable to increased population; the remaining three-fourths was attributable to increased per capita consumption. If, since 1946, we had depended upon population increases alone to generate new markets, our pulp and paper consumption last year, instead of totaling 31,250,000 tons, would have totaled only 22,400,000 tons.

Looking ahead, human nature being what it is, we can probably continue to count upon a reasonably constant increase in population; this factor alone will justify a limited expansion of the market for most of our end-products. To justify continuance of the expansion rate to which we have become accustomed, however, we must maintain the historical rate of increase in the major component of growth, namely, per capita consumption. This will not be easy, for this historical rate of growth has been high. It has been high for two reasons:

1. Because the industry has been able to develop an ever-widening range of end-products designed to meet consumer needs, and

2. Because the over-all economic and political climate has been such that the consumer can afford to buy these products in ever-increasing volume.

The over-all economic climate

As to the basic soundness of our American economy and the ability of the American consumer to continue buying our products in ever-increasing volume, I am still the "perennial optimist" that some have labeled me. We have not abolished the business cycle, but we have learned most in this country about the control of cyclical fluctuations. Basic readjustments in our over-all economy have been completed during 1954 with little or no loss in disposable personal income or consumption expenditures, and little or no change in savings or the investment potential represented by savings. Historical precedent to the contrary, I believe that, with competent economic and political leadership, we can keep our over-all national economy strong and healthy and continue to avoid serious depression and large-scale unemployment in the future.

With adequate natural resources and adequate productive facilities, there is no sound reason why our problems of distribution cannot be solved, and the "boom-or-bust" pattern put to rest. I look for continued long-term improvement in this country's productivity and in its basic living standards.

At the same time, however, we should bear in mind that some of the economic and political factors that have contributed to our per capita growth in recent years may not be operative in the future or, if operative, may be less potent in their impact upon future paper requirements. The accumulated unsatisfied demands of the war period, for example, have long since been fully met, and there is no longer a lag in our long-term rate of growth attributable to a deferment of normal expansion as during the war.

Further, our recent expansion has already taken into account the needs of national defense in the event of a new national emergency; the preparedness program recommended by the defense authorities is about completed, and the need for new facilities for defense will be a relatively minor consideration in considering the justification for further expansion. Similarly, in our forward planning, we can perhaps assume that foreign aid, economic assistance programs, and federal government expenditures will generate a relatively lower paper and paperboard requirement in the future than they have in the past.

If the rate of growth in per capita consumption is to be maintained, other new uses must be found. This will require much inventive genius on the part of our product development departments. We all employ what we consider mighty smart people in our development departments and if, in their combined efforts, they have overlooked some new product development requiring the use of a substantial tonnage of paper or paperboard, then perhaps we have over-estimated their ability.

Market development

While I am generally optimistic as regards the forward trend of our over-all national economy, my optimism in respect to the ability of the paper industry to generate consumer demand for its products as effectively in the future as it has in the past is more restrained. In the absence of more tangible evidence of constructive new market development in this country, excessive optimism in respect to the prospective growth rate for domestic paper consumption does not appear to be justified.

The high rate of growth in per capita consumption of paper during recent years has, for the most part, been a result of ideas born in sweat and blood during the worst economic depression in the nation's history. The existing green pastures of the paper industry at that time were relatively few, and never more unfertile. Market development was a matter of the starkest economic necessity. New pastures had to be invaded and the old ones cultivated to support life in the industry.

The largest pastures selected for invasion were in the fields of packaging and building. Paper succeeded in gaining a foot hold in these fields because it was found that it could supply serviceable products for these markets at less cost than competing industries. The same poverty that created the famine, with a little nudging, created the demand for new paper products that were less expensive than other products serving the same markets. Continually increasing labor costs which created the need for automatic or mechanical packaging have also contributed to our increased use of paper products. The same labor cost situation has forced a new method of food distribution in which eye-appeal and shelf-life of the product in packaging plays a very important part.

The growth in per capita consumption in the past 20 years has been attributable in large measure to the successful exploitation of these basic marketing ideas. Improvements in quality, over the years, have enabled us to establish a beachhead and consolidate our gains in these major markets. Today, over half of our total paper and board consumption is used for packaging purposes. The building industries have become the outlet for an increasing share of our total paper supply.

Whether we can continue to maintain the spectacular growth rates of the past in these important segments of the economy is open to some question. The obvious potential markets for packaging and building materials have been pretty thoroughly exploited. In these particular fields, our market research in the future must be directed to the less obvious. Further, as the quality of our products has improved and as competition for basic wood supply has increased, our costs have gone up.

While we still enjoy a competitive advantage in these markets, both from the standpoint of relative cost and relative serviceability, the profit margin of our competitive advantage is perhaps shrinking. Increased competition from without the industry is inevitable, and the future of our growth rate in these segments of the industry will depend in part upon how successfully we meet this new challenge.

Sanitary products for household and industrial consumption have also contributed significantly to the recent increase in per capita paper consumption in this country. Consumption of sanitary grades, due in part to new product development, has tripled since 1937. World War II, with its attendant labor shortages, provided the chief incentive for this spectacular market development. Here, too, the ground gained is rapidly being consolidated. There may well be practical limits to our ability to find new ap-

plications of a sound basic idea that has already been well exploited. Fresh ideas and new products will be needed to keep the growth rate as dynamic in the future as it has been in the recent past.

Too rigid reliance upon historical patterns of growth has perhaps in the past been a common fault of those who have built the productive capacity of this industry. The tendency has been to examine growth trends in the industry and to build new capacity for the manufacture of those products for which the historical growth rate appears to have been highest. Everyone wants to join the high man on the growth rate totem pole—few pay much attention to the low man. Carried to extremes, such a policy can be disastrous. Profitwise, it could knock over the whole totem pole.

There are opportunities for intelligent market development in every segment of this industry—not just in those segments that have come to be regarded as Cinderellas. Our market research programs must encompass the whole front, not just segments of it, and our future plant must be built with due regard for the whole pattern of growth of consumptive requirements. Otherwise, we may wind up with plant facilities that are lopsided in relationship to the new pattern of requirements. Within limits, our errors of judgment can be corrected later by grade shifting, but we can save ourselves this needless expense if we plan wisely in the first instance. The approach to market research must be both selective and rational. It must be based upon realistic appraisal of consumer habits and consumer needs, not as of yesterday, but as of tomorrow.

The export market

In our forward planning, of course, the possibilities of further market development abroad will not be overlooked. We know that, outside of North America, average per capita consumption of pulp and paper, despite spectacular improvement in recent months, is still less than it was prewar. For this reason, the potentialities of growth are relatively greater abroad than they are at home. We know, too, that improvements in the pulp and paper economies of the Old World, for the foreseeable future, must be based upon either North American fiber or North American end-products. Beyond this, however, we know little about the basic factors that will affect forward trends in the pulp and paper economies of Old World.

More extensive market research abroad, a better understanding of trends in those industries that consume pulp or paper, and a more intensive study of trade and currency problems are prerequisites for intelligent export development. Foreign markets undoubtedly will absorb more of our products in the future than they have in the past. The important question, however, is how much more? Expansion of domestic facilities to supply export markets will necessarily be a more speculative venture than expansion to supply domestic needs. To the extent that we can learn more about the potentialities of these export markets, the element of risk in this type of expansion may be significantly reduced.

The second factor that has accounted for the very high rate of fiber consumption in the domestic paper and board industry has been the rapid rise in the relative importance of wood pulp in the over-all fiber furnish of paper and paperboard.

In 1946, at the beginning of the postwar expansion cycle, 58 per cent of our total fiber consumption in paper and paperboard was wood pulp; last year 65.6 per cent of the total furnish was wood pulp. This is not surprising in view of the marked trend toward integration in paper and paperboard production.

What is significant, however, is the fact that if furnish ratios had stayed where they were in 1946, we would be consuming 2,172,000 tons less wood pulp than we are currently using. In other words, one-third of the postwar growth in pulp consumption by the paper and board industry has been attributable to furnish changes; only two-thirds of the total increase has resulted from growth in paper and paperboard production and new uses.

The installation of new integrated pulp and paper capacity, in addition to increasing the supply of paper made from virgin wood pulp, also operates to increase the potential supply of salvageable waste paper. In 1946 we recovered in the form of waste paper 32.3 per cent of the total domestic supply of paper and paperboard; by the first half of this year our salvage rate had dropped to 26.2 per cent. Expressed differently, waste paper consumption in 1946 was equal to 60 per cent of wood pulp consumption.

The addition of 10,000,000 tons of wood pulp capacity during the postwar period, on this basis, indicates a potential addition to the waste paper supply of 6,000,000 tons. The actual increase in waste paper consumption between 1946 and 1953 was only 1,250,000 tons. The unused increment in the waste paper potential would accordingly appear to be a magnitude of 4,750,000 tons, or four-fifths of the total potential generated by the recent expansion of the wood pulp industry. It must be recognized, however, that a large part of the paperboard tonnage which we would normally recover went abroad, and it was not economically sound to attempt recovery.

The point of all this is that the availability of this increased potential supply of waste is a factor that must be taken into consideration in considering future expansion of our pulp and paper facilities. As the supply of recoverable waste increases in relation to the demand, an ancillary expansion cycle could at some point begin in those segments of the industry that depend upon waste paper and market pulp.

Relative economics will, of course, determine the pattern of fiber consumption, upon which the paper and paperboard industry's long-range growth will be based. My own views are that, to the extent that waste from paper and paperboard made from improved quality pulp is economically recoverable, it will gradually find a use, and that the relatively more favorable increase in the use of wood pulp versus waste will not continue for long at the postwar rate. If, in fact, we are to use relatively more waste in the over-all furnish of paper and paperboard in the future, we must make certain that, in our forward planning, we do not construct duplicate sets of facilities, one based primarily on virgin fiber and the other primarily upon waste to serve the same end markets. To the extent that we do, we are inviting trouble.

I would like to make one observation as to potential waste paper supply in the short-range period, and that is, I think too few of us realize how much waste paper is being made nonusable through coating and additives of various kinds in the original furnish of the paper and paperboard. Until our research departments find out how to make this usable, users of waste papers and the waste paper dealers may have some severe headaches.

The recent ruling to permit aluminum foil inserts in magazine advertising sections will also cause numerous headaches. This waste paper situation will get worse before it gets better. The means of making these special papers and paperboards usable fiber will be one of our most engrossing projects in the immediate future. In an area which has historically consumed such great quantities of waste paper, this matter should be deeply interesting to all.

An industrial accident investigation technique

Part II

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Neenah, Wis.

▶ In this, the second part of a two-part article on Kimberly-Clark's accident investigation methods, Mr. Tuchscherer discusses the important role played by management in any successful safety program and the necessity of employee cooperation

▶ Following in natural sequence Part I (which appeared in January), this discussion considers such other aspects as committee recommendations, report distribution and effective action

▶ During 1953 Kimberly-Clark worked a total of 15,679,785 man-hours in seven company units for a frequency rate of 2.93, down almost 34 per cent from its 1952 rate. For this the firm was awarded the Arthur Hoyt Scott Trophy

SOMETIMES WE have heard reference to the idea that an accident investigation committee may be dominated by management personnel.

While this may be true in some plants. it is not our experience. We would again repeat that management is responsible for safety, and as such management must take the initiative to conduct adequate, complete and unbiased investigations. Without the help and assistance as well as participation of the supervisor something is lost in terms of the investigation, namely the importance of safety and the individual significance and attention that the departmental supervision wish to place upon it. The impression given by an enthusiastic, active, aggressive and lively supervisor participating in an investigation can be reflected throughout the committee and will definitely show up in the facts presented as well as in the thoroughness and completeness of the recommendations made. If any doubt remains as to the possibility of supervisory domination it might be well to consider having an equal number of hourly paid people to match or offset salaried supervisors or safety experts. While no voting takes place, there is ample opportunity to have the so-called "other point of view" expressed in such a committee function.

Although management has the primary responsibility for safety, it must be remembered that total plant safety is a cooperative effort and no element or group of employees may be ignored in the safety program. In one of our mills the union has asked to have a union representative participate in all accident investigations. This man is selected by the union and attends each invesigation. The mill experience has been that this individual can make a sizable contribution in the accident investigation process and is in an excellent position to carry the facts and safety philosophy back to the union floor, thereby providing another opportunity to sell safety.

Achieving employee cooperation

With a "Let's not have this happen again" rather than the "You violated the rules" approach, we have been quite successful in getting employee cooperation in an during accident investigations. All safety men and supervisors have certainly experienced the talkative as opposed to the clam-type worker, as well as the solid, average man who sees the value of accident investigation and does his part to contribute. After an honest and sincere explanation of the reason for investigation we have found that the reluctant and quiet type of employee is willing to participate and make a contribution toward the prevention of further injury. We feel we have been successful because of the obvious and real sincerity which has been demonstrated by the foreman in handling cases involving less cooperative employees.

The fellow who is hardest to handle in such a situation is the "eager beaver" type who is almost proud of his accident and who will not stop talking. This fellow poses a problem for the reason that he is proficient at clouding the issue, swinging the committee off on a tangent and distorting the facts after much rationalization usually due to frequent repitition of what happened to him. The supervisor must take the lead in insisting that the best possible judgment be exercised and that the overly enthusiastic individual exert no undue influence upon the investigation procedure or its outcome.

Management must know as much as possible about what caused the accident. It can be assumed that the doctors and the medical department will take care of the injury and that the plant cost department will determine the extent of the property

damage involved. The third part of this triangle is the matter of what can be done to prevent having the incident happen again. In this area, together with clarity and completeness, it is probably most important that the recommendations be practical. The committee must remember that the business must continue to operate, that machines must produce and that ways and means must be found to protect personnel and eliminate injury while at the same time permitting maximum productivity.

It has been our experience that one of the items that can most quickly upset and ruin the effects of a good investigation are poor or impractical recommendations.

Some of the elements which every recommendation should include are:

1. A proposal for employee education, including suggestions as to how it should be done and who is to do it.
2. Concrete suggestions for improvement in the procedure or process to eliminate the hazard. This frequently includes guards or other methods of protection.
3. Proposals for either repairs, additions or changes to the equipment or plant. (Design changes are often required and in this area the engineering department in the plant should be freely consulted.)
4. Suggestions and ideas as to how existing mill safety practices can be enforced. If rules are not established for such a situation, the recommendations should include a proposed rule.
5. Proposals for the use of safety equipment and protective devices which will safeguard individuals or eliminate the opportunity for injury.

Just as job assignments in any area must be specific and complete, so also assigned responsibility in connection with accident prevention must be directed to specific individuals. We have found in the past that statements such as "All employees should be reminded to wear goggles when operating a grinder" are not adequate or sufficient to effect compliance. Instead, an assignment worded the following way fixes responsibility and sets a time table as to when it must be accomplished: "The foreman, Clarence Smith, will meet with his crew within the next 4 weeks, explaining to each man the reason why goggles must be worn when grinding." There can be no argument that the latter puts the ball directly into Clarence's hands and definitely spells out his responsibility together with the expected completion date for this job. We have found that whenever any action has to be taken, assignment to an individual, together with a completion date, has proved immeasurably more profitable and successful in accomplishing preventive recommendations.

Report distribution

We have heard considerable discussion about who should receive copies of accident investigation reports. Even within our own organization there is a considerable variety of opinion and practice in this regard. Certain practices are, however, standard, and they include the mill or plant manager, the superintendent of the department in which the accident occurred and superintendents of other departments within the plant who may be required to take some action or who should be informed about the situation.

Our practice has been to circulate copies of reports covering the more serious accidents to all of our mills. Several mills have similar or in some cases exact equipment and processes, so that the same or similar accidents could happen at those locations. Obviously, the use of investigations in those areas is of considerable value and merit as they provide a warning and check list to the mill management to help avoid similar experiences. Our mill safety men get considerable help and many good ideas from a review of accident investigation reports from other units even though the process may not be similar to the one in the location with which they are concerned. Accidents occurring in Engineering, Materials Handling and Transportation departments should be given wide circulation for the obvious reason that these types of problems are common to all areas.

Practices vary considerably as to whether or not investigations should be posted on bulletin boards for all employees to review and read. There are advantages as well as disadvantages to this procedure. It is felt by some that the publicity given in such a manner causes additional embarrassment for the injured employee and perhaps has a long-term ill effect as it discourages future participation in accident investigation. Generally speaking, this has not been our experience. We make a practice of posting all lost-time accidents on bulletin boards feeling that employees want to know what is going on and why the frequency record or rate is as high or as low as it is. A good well-written accident investigation report need not necessarily cause shame and embarassment. We feel that posting serves the following useful purposes:

1. It shows management's attitude toward the importance of safety.
2. It is another part of the safety educational process.
3. It gives all employees the correct factual information as to what happened in the accident, thereby squelching false rumors and erroneous reports.

It is our feeling that the matter of distribution of accident reports should be resolved on the basis of wider rather than limited distribution. The supervisor who is not interested can always throw the report into the wastebasket, but the identical accident that happens because a supervisor didn't know about the one in another department is inexcusable.

Taking action

Except in instances where an accident investigation committee has the authority to take independent action and enforce or activate its own recommendations, most committees usually report to an authority or some responsible person in the organization having the power to take action. In

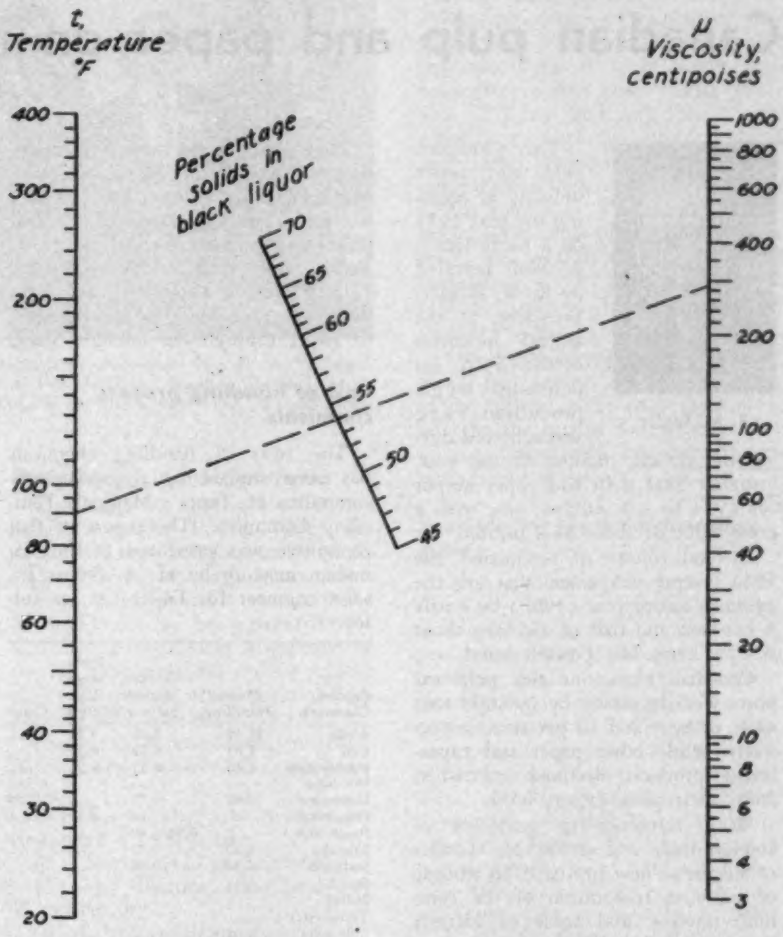
most cases the plant or mill manager represents that final authority. Practice within Kimberly-Clark varies to the extent that in important cases, usually those involving lost-time or a serious injury, the investigation is reviewed by the mill manager and approval given to proceed with the recommendations of the committee. In other cases of a less serious nature the department superintendent reviews the action of the committee and endorses or approves the recommendations outlined. While approval does not necessarily mean enforcement, approval and endorsement gives authority for enforcement and the recommendations are then in a position to be put into effect. Once approved, the recommendations become plant policy and procedure and constitute a significant portion of the entire safety program.

As has already been pointed out, accident investigations serve a number of functions in the over-all safety effort. Summarized, the following three broad areas are serviced by this procedure.

1. **The investigation is covered with employees working on the same job and related jobs so as to point out the hazard and to prevent recurrence.**
2. **Others not on the same job but exposed to similar hazards or on related equipment benefit by previous mistakes made and are educated along preventive lines.**
3. **Of equally great value is the effect of the accident investigation report upon the supervisory group in any organization. This is an excellent media to get "across the board" appreciation of the importance of safety in any organization. It points up quite conclusively the areas where additional work and effort must be expended in order to attain accident-free experience.**

One of our mills makes a practice of reviewing each lost-time accident in the weekly superintendent's meeting. The superintendent in whose department the accident occurred discusses the situation, pointing out the corrective action to be taken. In all lost-time cases the superintendent is part of the investigating committee. All injury cases are investigated, that is, those which require medical attention but not lost-time. In such instances the assistant superintendent or day foreman participates as a member of the accident investigating committee, and the case is reviewed within the department by the superintendent and his foremen and supervisors. In the case of "near accidents" where no one is hurt but there was a possi-

(Continued on page 1136)



Nomograph for viscosity of black liquor

D. S. DAVIS
Professor of Chemical Engineering
Virginia Polytechnic Institute

THE DESIGN OF EQUIPMENT to handle black liquor requires knowledge of the viscosity of this material over wide ranges of temperature and concentration. Reliable data (2) on the effect of temperature on the viscosity of black liquor can be correlated by means of the equation

$$\mu = a\,t^b$$

where μ = viscosity, in centipoises
t = temperature, in degrees Fahrenheit
and a and b depend upon the concentration.

The equation can be solved conveniently and accurately through use of the accompanying line coordinate chart, which was constructed by means of methods described previously (1). The use of the chart is illustrated as follows: At 90° F., what is the viscosity of black liquor that contains 54 per cent solids? Connect 90 on the t scale and 54 on the percentage solids scale with a straight line and note that it intersects the viscosity scale at the desired value, 290 centipoises. At what temperature must a 50 per cent black liquor be maintained so that the viscosity will not exceed 80 centipoises? Connect 80 on the μ scale and 50 on the percentage solids scale with a straight line (not shown) and note the intersection with the temperature scale at 100° F.

(1) Davis, D. S., "Empirical Equations and Nomography," Chap. IX, McGraw-Hill Book Co. Inc., New York (1943).
(2) "University of Maine Lectures on Pulp and Paper," Series II, page 143 (1953).

Canadian pulp and paper on rising trend

R. M. Fowler

The Canadian pulp and paper industry is entering the year 1955 on a rising trend, it was revealed by R. M. Fowler, president, at the annual luncheon of the CPPA. An unusually high production rate was achieved during the closing months of the year, bringing total pulp and paper output for 1954 to 9.9 million tons, with a gross value of about $1.2 billion.

In total volume of production, the 1954 output surpassed that of the previous record year (1951) by nearly 5 per cent and that of 1953 by about 6.5 per cent, Mr. Fowler stated.

Canadian newsprint and pulp exports were increased by 200,000 tons each, or by 4 and 10 per cent, respectively, while other paper and paperboard products declined somewhat, from their peak export level.

With reference to problems of foreign trade and tariffs, Mr. Fowler called for a "new approach, an attitude of mind, a recognition of the common interest, and sense of identity between all the elements in our community and with like-minded people in other friendly nations."

New chairman and awards

At the CPPA's technical section annual business luncheon, W. S. Cramp, resident manager, St. Lawrence Corp. Ltd., was elected chairman of the executive council, and Dr. R. deMontigny, technical director, E. B. Eddy Co., was elected vice chairman. Two new councillors, Gerald Penney, Bowater's Newfoundland Pulp & Paper Mills Ltd., and J. W. Wing, Gaspesia Sulphite Co. Ltd., were added to the executive council.

The F. G. Robinson Technical Section Service Award, given for the most valuable contribution toward the furtherance of the aims and objectives of the Technical Section, was awarded to Dr. K. C. Logan, director of development, Northeastern Paper Products Ltd.

The I. H. Weldon Gold Medal was presented to Dr. W. H. Rapson, Department of Chemical Engineering, University of Toronto. The medal was awarded to Dr. Rapson for his paper, "A Continuous Process for the Manufacture of Chlorine Dioxide."

First prize in the gadget competition was won by H. Moore, Ontario-Minnesota Pulp & Paper Co. Ltd., for his rotor pulling beam. The second prize was jointly awarded to J. A. Ferrier and A. B. Hopkins, Spruce Falls Power & Paper Co. Ltd., for their device enabling easier threading of paper through the calender stack.

Cost of handling process chemicals

The costs of handling chemicals has been studied by a special subcommittee of Tappi's Materials Handling Committee. The report of that committee was presented at the Canadian meeting by H. A. Stoess Jr., sales engineer for Fuller Co., as follows:

Process Chemicals	Manual Handling	Trucks, fork or palletized	Pneumatic Handling	Crane
Alum	$1.50	0.20	0.20	----
Clay	1.65	0.29	0.30	----
Pebble lime	1.20	0.33	0.34	----
Hot lime	----	----	----	----
Limestone	4.00	0.71	----	0.19
Lime-mud	----	----	0.30	----
Rosin size	----	0.30/0.40	----	----
Saltcake	1.20	0.32	----	----
Soda-ash	1.30	0.40	----	----
Starch	----	----	----	----
Sulfur	----	----	----	----
Titanium dioxide	----	----	----	----

Determination of penetration rate

N. I. Paranyi and W. Rabinovitch, Pulp & Paper Research Institute of Canada, described a quartz spiral balance which permits direct and continuous measurement of the weight increase of a wood chip during penetration of deaerated water under controlled temperatures and pressures.

Electrical Engineering: C. A. Laverty (chairman), Anglo-Canadian Pulp & Paper Mills, and W. Schaelchlin, Westinghouse Electric Corp.

Their experiments confirmed earlier work that the process of penetration proceeds in two stages: (a) mass penetration, a rapid filling followed by (b) a secondary slow stage.

W. S. Cramp

Among the conclusions reached during this investigation are:

(1) Mass penetration depends upon the temperature of the penetrant and the hydrostatic pressure on the system. The over-all rate of penetration is controlled by mass penetration.

(2) The effect of various gases in the wood chip on the rate of penetration seems to correlate with their average molecular velocity rather than with their solubilities.

Unbleached sulfite yield

A. B. Gorham of Ontario Paper Co. Ltd. discussed a method—developed by Ontario Paper—for checking the yield determination by carrying out a materials balance study on the digester. Monthly sulfite mill statistics are used to calculate the amount of total solids that should be present in the waste sulfite liquor based on the yield for that particular month. This calculated total solids figure is then compared to the actual total solids figure that has been determined analytically from the waste sulfite figure. Mr. Gorham also presented a relationship that exists between total solids and yield.

Cohesive Rating

As part of a discussion on high yield sulfite pulping, J. M. Woods and J. S. Hart, Pulp & Paper Research Institute of Canada, discussed cohesive rating — an index of the ease of fiberizing.

Measurement of the material that binds fibers together in the high yield pulp is not necessarily a measurement of the fiberizing quality of that pulp, the author stated. The latter also depends on other factors such as the method of cooking. Cohesive rating is defined as a numerical figure which expresses the measurement of the "ease of fiberizing".

Close correlation has been found in the laboratory between the cohesive rating and the refining energy under standard refining conditions. With ad-

Materials Handling Session: F. H. Wiley, International Harvester Co.; D. A. Gillespie, Northern Electric Co. Ltd. (national president of the Materials Handling Society); H. E. Mason (chairman), Howard Smith Paper Mills Ltd.; H. A. Stoess, the Fuller Co., and Ernest Mason of Canada Paper Co.

ditional information based on a mill experience, a correlation of cohesive rating with refining to a required pulp quality would be generally useful for mill control purposes.

What is even more important, it could also be used for evaluating pulping methods in terms of the energy required for subsequent fiberizing in refining.

Degradation of cellulose

Theodore N. Kleinert, Pulp & Paper Research Institute of Canada, showed that through a comparatively mild acid hydrolysis of commercial dissolving pulps, containing high molecular portions, the filterability of the viscoses obtained from these pulps can be improved. This improved filterability results from the degradation of the high molecular portions which cause filter clogging in commercial operations.

Dryer felt permeability

Edward H. Snider, Canadian International Paper Co., discussed the importance of dryer felt permeability in relation to the operating efficiency of the paper machine dryer section and demonstrated the marked differences which exist in the permeability to steam of typical cotton dryer felts currently on the market.

Multiple weave felts are generally more permeable than the single weave felts. The most permeable multiple weave felt tested was 2½ times more permeable than the least permeable single weave felt tested.

As Mr. Snider pointed out, the importance of felt permeability becomes increasingly apparent when we consider that 80 per cent of the water removed in a paper machine dryer section is evaporated while the sheet is in actual contact with the dryer surface, and only 20 per cent is evaporated in the open draws or free run between the drying cylinders.

Selection of industrial trucks

Discussing the criteria for selecting industrial trucks, F. W. Wiley, International Harvester Co., reviewed the various conditions in a plant which determine the desirable characteristics of equipment to be purchased. He said that an equipment investment of several thousands of dollars placed under the control of an untrained individual is a poor financial risk.

Factors to be considered in selecting industrial power equipment include:

(1) The working area in which the equipment is to be used.
(2) The material to be moved.
(3) The distance, time, and rate of movement.
(4) Safety requirements.
(5) The cost objectives.

Kraft mill sodium balance

R. G. Shirriff and J. R. Rowley, LongLac Pulp & Paper Co. Ltd., showed how soda losses can be reduced by pinpointing the major sources of such losses. Corrective action can then be taken to change operating procedures or equipment. The major soda losses, as shown by the authors, occur as main sewer loss, evaporator sewer loss, washer sewer loss, stack loss, and pulp loss. A summary of the measured and calculated soda losses is prepared daily and circulated to all departments contributing to the total loss. The results are reported in pounds of saltcake loss per shift; and against the total saltcake loss for any one day is shown the saltcake addition to the system in pounds per day.

The major benefits from this sampling and testing system, according to the authors, come from the knowledge on the part of the operators that unusual losses will be detected, reported, and questioned.

Specializing material handling duties

D. A. Gillespie, Northern Electric Co. Ltd., discussed the qualifications of a materials handling specialist. For maximum efficiency these qualifications must be high, since the specialist should be qualified to submit a cost reduction analysis before and after each project. He must be experienced in the operations of the company. He must also be a practical engineer, capable of designing his own equipment and lay-out. He must have a general knowledge of accounting practices. In many cases the materials handling specialist is expected to solve problems and suggest installations that will save the company from $200,000 to $400,000 per annum.

In a well-planned operational chart the materials handling specialist should therefore report directly to staff engineering, or through the gen-

Board-Finish Discussion: I. S. Campbell, Sair Co. (Canada) Ltd. (discussion leader), and W. B. Csellak, Gardner Board & Carton Co.

Newsprint: Ray Ott, Donohue Bros. Ltd.; G. C. Boone (chairman), the James MacLaren Co. Ltd., and W. S. Cramp, St. Lawrence Corp. Ltd.

eral works manager and production engineer depending on the size of the company involved.

Cowan gravity thickener

C. D. McCullouch, Abitibi Power & Paper Co. Ltd., described the Cowan gravity thickener installation at Iroquois Falls.

The design of the installed unit is such that it is ideally suited to the renovation program, especially where new equipment has to be installed without interrupting the manufacturing process. The factors that make a Cowan thickener highly suitable for this purpose are:

1. It has a high capacity per pound of material or dollar of expenditure.
2. Floor space requirements are very low and the units, in most cases, can be installed as existing obsolete equipment is being removed.
3. The units are so simple to operate that no extensive training or experience is required to operate them efficiently.
4. The thickeners are simple in construction and easy to maintain.

Ross diagram

R. K. Strapp, Pulp & Paper Research Institute of Canada, discussed the use of the Ross diagram as an analytical guide for chemical pulping and other extraction processes. He showed how the use of the diagram brings out relationships in chemical pulping which are generally missed in a study of masses of tabulated data. The application of the Ross diagram to a compartative study of soda, kraft and sulfite cooking of the same wood species shows that it is a useful guide to research in chemical pulping and eventually even to mill process control. It also appears to have applicability in bleaching or other chemical processing involving the simultaneous extraction of two major components.

Mr. Strapp discussed in detail how the Ross diagram lends itself to such studies as (1) Comparison of the extractive processes in soda (NaOH) versus kraft versus sulfite cooking of the same wood; and (2) effects of varying time, or concentration, or chemical acid type, or pH, etc. under different temperature conditions with the same wood.

The diagram's usefulness as a guide to research in chemical pulping has been tested at the Institute for more than two years.

Moisture in a running dryer felt

W. A. W. Rogers and G. Webster, Canadian International Paper Co., described a moisture measuring technique for running dryer felts by the use of a beta meter. It was found that under normal operating conditions the moisture in the dryer felt varied from 2.5 to 4.5 per cent. Under abnormal conditions moistures as high as 5 per cent were observed.

The conclusion drawn from this experiment was that with machines carrying a felt moisture consistently above 5 per cent, additional drying felt capacity could be of real benefit to the mill. No additional drying capacity is needed in mills where felts have a running moisture content below 5 per cent.

Machine characteristics and paper uniformity

J. Mardon, G. Gavelin, and K. C. Logan described a method of measuring some of the variations associated with paper machines which affect paper uniformity.

The measurement of short-period basis-weight fluctuations which exist in all paper machines is of extreme importance since these fluctuations will lower the effective strength of the paper as it is drawn off the couch and the presses.

Short-period basis-weight fluctuations also result in moisture variations of the paper and will effect the evenness of the reels.

For the purpose of this investigation conditions were studied at the head box and by means of specially designed Pitot tubes and correlated with the short-term basis-weight fluctuations which in turn were correlated with reel quality.

New type sectional drive

A new type of sectional drive for high speed paper machines was described by W. Schaelchlin, Westinghouse Electric Corp. The Westinghouse Magamp drive consists basically of two units: (1) the differential error detector and (2) the Magamp control unit.

Operation and tests for the new unit showed that the maximum speed error during a load change was 0.04 per cent, receding to zero a small fraction of a second after the load had stabilized.

Another interesting observation was that load changes of 20 per cent, due to vacuum variations, caused a deflection of the differential output shaft on the couch of less than 1/3°.

The dryer regulator was tested by purposely breaking the sheet between the dryer and the calender at a pulling load of about 1200 amp. Not a trace of sag-back of the sheet was noticeable at the smoothing press during this test.

Other papers presented at the meeting were, "A Canadian's view of the Scandanavian pulp industry" by C. L. Tomlinson; "The high rupturing capacity fuse and its effect on equipment design" by S. M. Prout; "Printability requirements for uncoated paper stocks" by Alex Glassman; "Report on the closed hood installation at Thorold" by V. L. Savage; "The value of weather modification operation to the pulp and paper industries" by Irving P. Krick; and "St. Lawrence Corp.'s Carthage-Norman chipper installation" by J. H. Bardsley and R. H. Smith.

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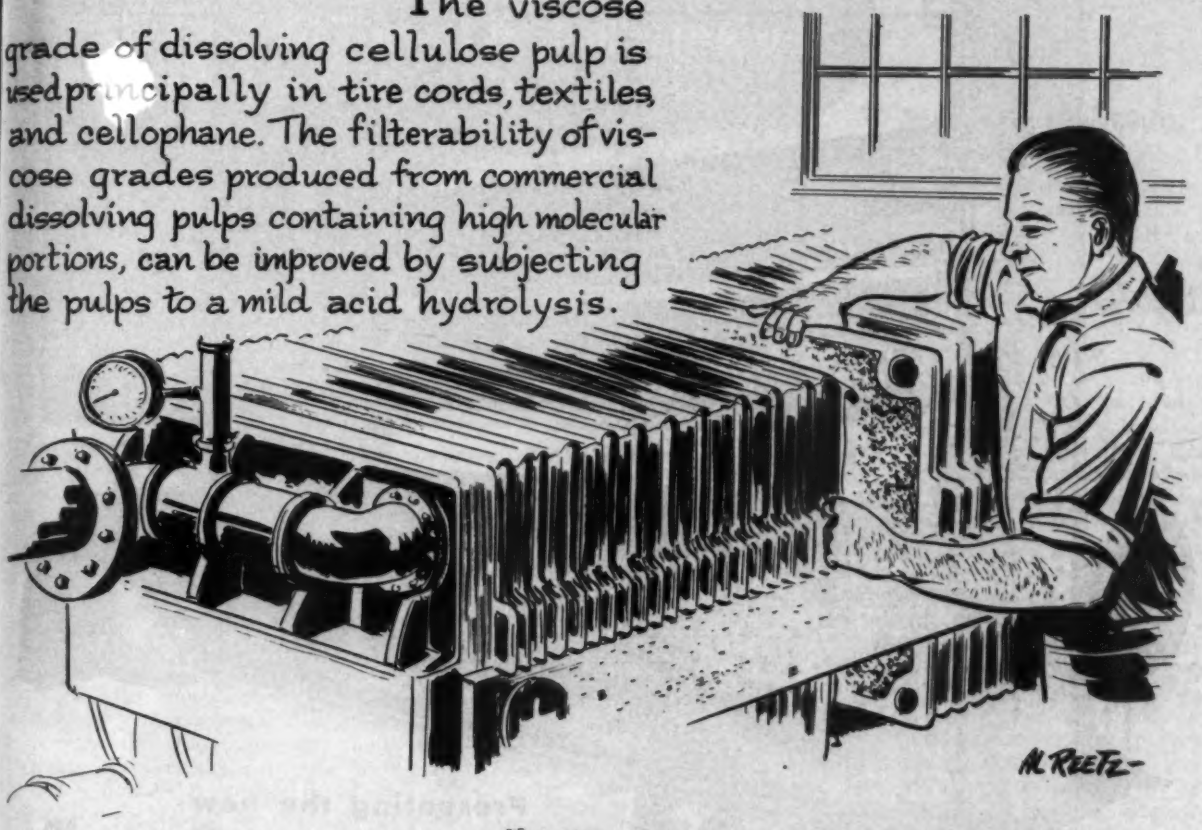
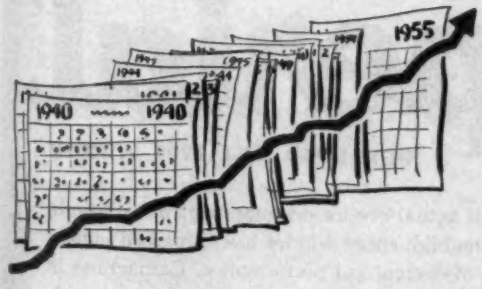
PAPER SKETCHES

The viscose grade of dissolving cellulose pulp is used principally in tire cords, textiles, and cellophane. The filterability of viscose grades produced from commercial dissolving pulps containing high molecular portions, can be improved by subjecting the pulps to a mild acid hydrolysis.





DURING the past 15 years usage of dissolving cellulose pulp by the rayon, plastics, photographic film, cellophane, and other industries has increased 350 per cent.

As Early As 1883, Sir Joseph Wilson Swan of England used nitro cellulose to make filaments for his pioneer electric lamps and recognized their possible use in producing fabrics.

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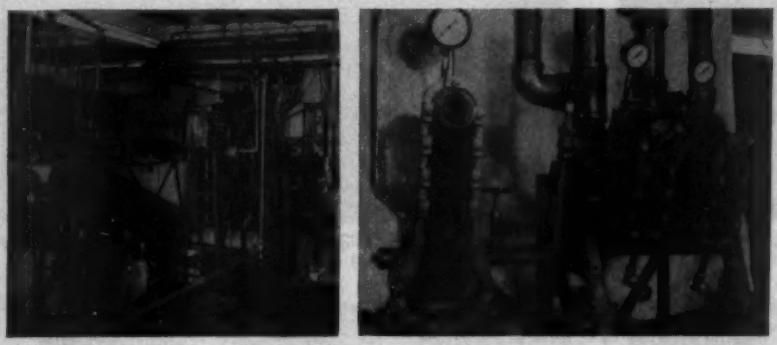

PILOT PLANT for Integrated Mica's new development is shown at the left; at the right, a battery of disintegrators that split the mica to a thickness of less than 1/10,000 in.

Mica Sheets at Paper Thickness Claimed by New York Firm

Culminating five years' research, Integrated Mica Corp. of Woodmere, N. Y., has announced the development of new equipment that makes possible the manufacture of "mica sheets of paper thickness at a price that will make it possible to substitute this for some of the better grades of paper now used in the electrical industry." It is also claimed that the product will "largely if not entirely" replace the finer qualities of asbestos paper.

According to Integrated Mica, "The advantage of the new product is that the new type of paper . . . will not burn at any temperature and is virtually ageless." The product is made entirely from overlapping mica flakes that hold together by cohesion.

The paper is now being made in thicknesses varying from that of tissue paper to sheets 1/8 in. thick. No imported materials are used.

Original Process Expensive

Integrated Mica was being manufactured as far back as 1942, but the process was an expensive one. When the material had shown its value to the industry, the firm set about designing new equipment that would make it possible for the product to compete with paper. It was found that the alteration of papermaking equipment would not be adequate because of the basic differences in the raw materials used.

New machines had to be devised. Chief of these are batteries of disintegrators, in which streams of water moving at terrific velocities split the mica to a thickness of less than 1/10,000 in. Feeding these, according to the firm, are the "largest proportioning pumps ever built."

Cohesion, No Calenders

The machinery is of a massive nature inasmuch as it must operate 24 hours per day, seven days a week. Whereas ordinary paper receives much of its strength and finish in calendering, nothing of that kind can be used with mica. The flakes are held together purely by cohesion.

A license to manufacture Integrated Mica has been granted to Ateliers de Constructions Electriques de Charleroi in Belgium. That firm's subsidiary, Compagnie Generale Belge des Isolants, is now erecting a plant at Loth near Brussels. The factory is to be in production this year.

International Will Build Newsprint Mill in South

International Paper Co. has announced plans to build a $20,000,000 newsprint mill in the South. The location of the 100,000-ton plant will be disclosed later. Operation is scheduled for the latter part of 1956.

According to John H. Hinman, board chairman, the firm decided on the action because of the continued major expansion in the South.

30 Million Tons by 1960, APPA Survey Shows

Production capacity of the paper industry will be at an estimated minimum of 30,443,000 tons by the end of 1960. The forecast was issued by E. W. Tinker, executive secretary of the American Paper & Pulp Association.

The predicted capacity would be an increase of 1,252,090 tons over that at the end of 1954, with paper capacity increasing 703,080 tons and paperboard 549,010 tons. These data, Mr. Tinker said, are based on the Association's new-capacity survey covering all major grades of paper and board. In the paper group, newsprint shows the greatest increase — 165,340 tons; and in the board group, container board at 266,290 tons.

Between 1946 — when all World War II controls were lifted — and the end of 1954, the industry's capacity increased from 20,420,000 tons to 29,190,500 tons. During these years the production rate has averaged more than 90 per cent of capacity, indicating that the industry's capacity has grown in proportion with the country's needs.

Capacity Increase, 1955-1960 (Tons)

Newsprint	165,340
Book and Groundwood	127,410
Fine	68,820
Coarse	156,240
Tissue	148,800
Special Industrial and Absorbent	16,120
Building Paper	20,150
Total Paper	703,080
Container Board	266,290
Bending and Nonbending	213,590
Cardboard and Special Stock	11,160
Wet Board	6,200
Building Board	51,770
Total Board	549,010
TOTAL PAPER AND BOARD	1,252,090

Mr. Tinker explained that the data submitted for the survey were based on the industry's plans as of mid-1954, and that therefore it could be assumed that the 1957-1960 capacity figures reflect only minimum capacity possibilities. In all probability, additional plants will be constructed in that time; in addition, new equipment will be installed and existing facilities improved.

The largest increase among the various paper grades will be in news-

PART OF THE elevated flumes for conveying pulpwood from the log pond to the wood room at Crossett's kraft mill

CONSTRUCTION nearing completion on the new log pond at Crossett. It was designed by engineers at the Arkansas mill

Crossett Announces Expansion in Wood Room and Woodyard Facilities

EXPANSION OF existing woodyard and wood room facilities has been announced by Crossett Paper Mills of Crossett, Ark. Purpose of the project is two-fold: to increase capacity and to make provision for the installation of a log pond for the wet storage of pulpwood.

The work under contract, which was to be completed early this year, includes additional barking capacity, an elevated flume conveying system, log storage stacker, underwater storage for 25,000 cords of barked pulpwood, reclaiming by a gantry crane, utilization of revolving turntable fenders, and a new multi-knife chipper.

Six years ago the Crossett management initiated the study and investigation of ways and means to improve the efficiency of the operation of pulpwood handling, storing, reclaiming and processing at the kraft mill.

Many of the problems and allied difficulties represent labor and overhead costs that are incurred in an effort to insure continuous production. This insurance, together with cost and production, could be improved, the Crossett management found, through better operating methods and equipment.

Cost estimates confirmed by construction contracts indicated that the total capital investment required could be safely amortized by cost savings in: transportation to the woodyard, handling within the woodyard, and labor costs in processing. No evaluation has been attempted on the many possible benefits of improved operations, such as: procurement requirements, increased storage, fire safe storage, reduction of pulpwood loss and damage by insects and bacteria during storage, better chipping, improved pulp yield, and the possibility of any improvement in the quality of the finished product.

A preliminary report of woodyard operations was made by W. St. Laurent, consulting engineer. The log pond model was designed, constructed and tested by Crossett engineers. Design development and final engineering design, specifications, and construction supervision was done by Celli-Flynn Architects and Engineers of McKeesport, Pa.

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print as 150,000 tons are added by the close of 1956 to raise the total capacity to 1,422,000 tons. Smaller increases are planned for subsequent years until 1960, when it will become 1,438,000 tons, 33 per cent more than in 1953 and 13 per cent more than in 1954. In the next two years virtually all the increase will result from the addition of new machines, and thereafter by the improvement of existing equipment.

Potlatch Construction

Potlatch Forests Inc. has started construction work on its multi-million dollar pulp and paper mill at Lewiston, Idaho. Production of bleached boxboard and unbleached corrugated material will be rated at 200 tons per day, bringing the firm's paper capacity to 525 daily tons, according to a report in the Seattle, Wash. *Journal of Commerce.*

KVP-Watervliet Merger Discussed at Kalamazoo

Spokesmen for Kalamazoo Vegetable Parchment Co. and Watervliet Paper Co., both of Kalamazoo, Mich., have been discussing the advantages of consolidating or merging the two firms. Details have not been determined.

However, it is thought that such an action would be effected through an exchange of stock, with Watervliet continuing as a subsidiary or division of KVP. When details are completed, the proposal will be submitted to stockholders of both firms.

Pulp-Paper Now Maine's Leading Industry

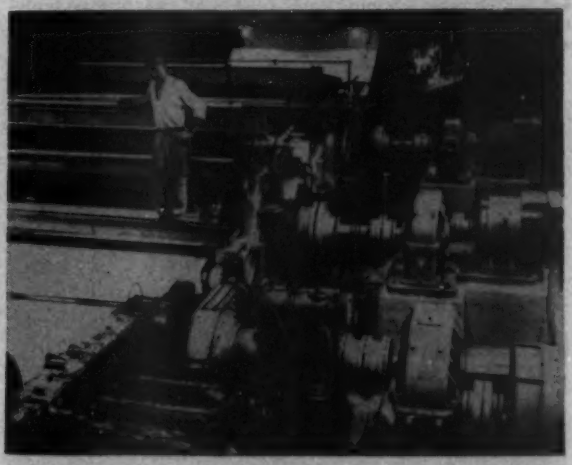
Pulp and paper manufacturing has taken over as Maine's largest industry. For more than half a century the lead was held by textiles.

Official figures show that pulp and paper products in the state in 1953 were valued at $285,000,000, compared to $256,000,000 for textiles.

MILL SUPERINTENDENT Eddie McGrath watches sheet at the wet end, while Fred Kelly checks his slice settings. Note the remote control panel for the Jones Fibremaster, also the Bauer Centri-cleaner

INSTRUMENTS FOR No. 3 proportioner are checked by Ralph Aiello, beater engineer. In the rear is the new alum proportioning system, and at the right is a jordan refining bleached sulfite

ONE OF THE control panels for the Harland sectional electric drive recently installed at the Sault Ste. Marie, Ont. mill of Abitibi Power & Paper Co. Ltd. The drive is capable of speeds up to 1200 fpm



AFTER REJUVENATION—Machine Tender Alex Turpin stands over first press section of No. 2 machine. In foreground, 150-hp couch drive and gear reducer assembly followed by two 70-hp units on first and second press sections

Abitibi's Soo Mill Revamps No. 2 Machine and Enters New Field

HIGH QUALITY NEWSPRINT has been the claim-to-fame of the Sault Ste. Marie, Ont. mill of Abitibi Power & Paper Co. Ltd. In mid-1953, however, the company selected this division to produce groundwood specialty papers (mail order catalog and telephone directory stock). No. 2 machine was practically rebuilt to meet the new need.

The first step was the installation of a completely new stock system that would furnish the machine with fine groundwood and specially prepared sulfite that can be brushed out in either a Bauer refiner or an E. D. Jones Fibremaster jordan. A second Fibremaster was installed to brush out and control drainage of mixed stock furnished to No. 2, and a De-Zurik regulator added to control basis weight.

Writing in *Abitibi*, a company publication, Roger J. Kelly described the addition of Centri-cleaners to the machine. In May 1954 the old tailings screen was removed. During week-end shutdowns the crew installed a locally designed stainless steel-lined headbox, a Valley Iron Works slice, a rubber-covered first press suction roll, and a tile-lined machine chest. Mr. Kelly is a control engineer.

After 43 Years

On the Fourth of July No. 2 was shut down for final alterations, and the old wood filled bevel gear drive and numerous belts and pulleys were replaced with a Harland sectional electric drive capable of speeds ranging as high as 1200 fpm. As a result, the Corliss steam engine was retired after 43 years' dependable service.

The Dominion fourdrinier section was largely renewed, the wirepit tile lined, and a Dominion shake installed. The old bronze shell was replaced with a rubber-covered second press suction roll, followed by the addition of a new calender stack frame and

Powell River Tests B. C.'s First Self-Dumping Log Barge

TEAKERNE ARM, Powell River Co. Ltd.'s log storage basin in British Columbia, was the scene recently of the first successful test in B. C. of a self-dumping log barge. The vessel (left), built at Burrard Drydock, was towed to the basin carrying a deck load of logs 35 ft. high—nearly 1,500,000 cu. ft. (right). The barge is the result of years of planning by the firm's logging division and is 342.8 ft. in length, with a 63-ft. beam, 19-ft. depth, and draws 3.5 ft. light and 14 ft. loaded

WHEN THE BARGE was towed into place the four 8-in. valves on her port side were opened and the water allowed to pour into the two large flooding tanks. The vessel began to tip (left), and the logs began to slide from the deck. In the space of 10 minutes the entire load of timber had been safely deposited in the water (r), the barge righted herself and was towed away. Five minutes after the logs were dumped they were corralled in flat booms ready for use at the mill

a set of freshly-ground rolls. A Mason-Neilan sectionalized steam pressure control system was installed on the dryer section to control moisture content.

On July 12, just eight days after the machine was shut down, a "spanking new baby" came to life in the Soo's machine room.

20 Firms Awarded Honors for Good Management

Twenty paper and allied products companies have been awarded Certificates of Management Excellence for 1954 in the sixth annual management survey conducted by the American Institute of Management.

Listed in More than One Category — Champion Paper & Fibre Co., Container Corp. of America, Crown Zellerbach Corp., International Paper Co., Kimberly-Clark Corp., Lily-Tulip Cup Corp., St. Regis Paper Co., Scott Paper Co., and West Virginia Pulp & Paper Co.

Paperboard Containers — Hinde & Dauch Paper Co. Ltd., Inland Container Corp., and Marathon Corp.

Pulp, Paper and Paperboard Mills — Brown Co., Chillicothe Paper Co., Great Northern Paper Co., International Cellucotton Products Co., Masonite Corp., and Powell River Co. Ltd.

Pulp Goods and Miscellaneous Paper Products — Dixie Cup Co. and United States Playing Card Co.

Financial Aid Requested for Nova Scotia Mill

The Eastern Shore Development Association has asked the government of Nova Scotia for financial aid in the establishment of a $10,000,000 mill at Sheet Harbor. The group presented its brief to Premier Henry

Hicks, Industry Minister Wilfred Dauphinee, and other cabinet officers.

Halifax Power & Pulp Co. Ltd. will build the big newsprint plant provided low-cost power can be utilized and adequate pulpwood resources in the area made available.

Fox River Paper Closes No. 1 Mill; Papermaking Capacity is Unchanged

As part of a long-range program started in 1944, Fox River Paper Corp. has discontinued manufacturing operations at its No. 1 mill in Appleton, Wis. Because of recently completed improvements at the Telulah mill, however, the firm's papermaking capacity remains unchanged. (Operations were discontinued at No. 2 mill in 1948 and at No. 3 in 1952.).

William Roberts, president, announced that, pending sale of the idle properties, the buildings will be used for storage purposes.

Fox River undertook a study of its properties in 1944. The survey resulted in a decision to concentrate operations in the Telulah mill and adjoining property at Appleton.

Mill improvements were begun in 1946, and $2,250,000 has been spent to date. Among principal results are a 100 per cent increase in capacity at Telulah, a 50 per cent reduction in company-wide employment without sacrifice in capacity, and a cotton pulp plant that has reduced by one-third the cost of this principal raw material.

Fulfillment of the firm's long-range plans calls for the installation of an additional paper machine, the rebuilding of the former Patten Paper Co. mill, and the construction of additional power facilities. The Patten mill will be converted into an air-conditioned finishing department and storage building.

K-C to Build Mill and Converting Unit in West

Kimberly-Clark Corp. has announced plans for the construction of a mill in Fullerton, Cal., to manufacture and convert sanitary creped wadding products for West Coast markets. Operation is expected early in 1956.

The plant will be located on a 50-acre tract and will consist of about 250,000 sq. ft. Project man-

What, actually, do Vacuum Pumps on paper machines handle?

Paper mill engineers know that it is actually a mixture of air and water vapor, but the custom of rating vacuum pumps in terms of air capacity alone causes this important fact to be frequently overlooked.

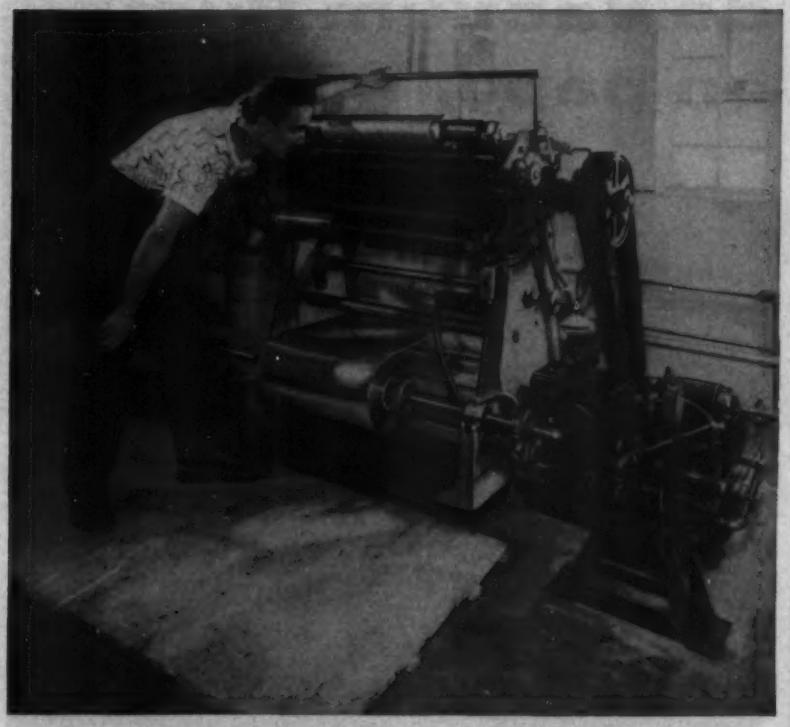
The presence of this water vapor causes a considerable reduction of the effective air handling capacity of any vacuum pump except the Nash. In the Nash Vacuum Pump the bulk of this water vapor is effectively condensed, due to the Nash operating principle. The air handling capacity of the Nash is therefore not reduced.

That is one of the reasons why Nash Vacuum Pumps are standard in over a thousand leading Paper Mills.

NASH ENGINEERING COMPANY

443 WILSON ROAD, SO. NORWALK, CONN.

SLITTING PRETTY at Transparent Paper Products Co., Ltd.



Askania Edge Position Controls Cut Payroll Costs 1/3—Increase Production 100%

"These Askania controls—they're magnifique!" says Mr. Claud Hebert, President of Transparent Paper Products Co., Ltd., Montreal, Canada.

"By installing Askania edge position controls on our two Beck slitting machines we have been able to cut slitter operation from 3 shifts to 2—and still double slitter production."

Here's what Askania controls did for Mr. Hebert's company:

ELIMINATED TRIM WASTE. It was formerly necessary to trim ¼ inch from both edges of each roll after slitting. Six months of operation with Askania controls produced no trim waste at all.

PERMITTED FASTER MACHINE SPEED. The slitters now run at 600 ft. per minute. Before adding Askania controls, they were run at 230 ft. per minute so the slitter operator could watch the web and adjust the roll by hand.

IMPROVED EDGE TOLERANCE. Precision tolerances at Transparent Paper Products Co., Ltd., are now better than ⅛ of an inch. Before installing Askania controls they used to vary as much as ½ inch.

• • •

NOTHING TOUCHES THE WEB BUT A BREATH OF AIR

A stream of low pressure air passes across the edge of the web to measure and transmit the signal.

If you have a web-guiding problem it will pay you to investigate the advantages of Askania controls. Write for Bulletin No. 161.

ASKANIA REGULATOR COMPANY

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A SUBSIDIARY OF GENERAL PRECISION EQUIPMENT CORPORATION

News of the Industry . . .

ager during construction is James A. Murphy, director of development and administration for K-C's research activities. It is expected that he will be made the new operation's resident manager.

Installation of Cyclonic Pulp Cleaners Improves Quality at Powell River

Technicians at Powell River Co. Ltd. have recently installed a battery of centri-cleaners on No. 3 paper machine. According to the firm, the quality improvement has been "decidedly encouraging." No. 3 produces rotogravure under the trade name, "Supertone."

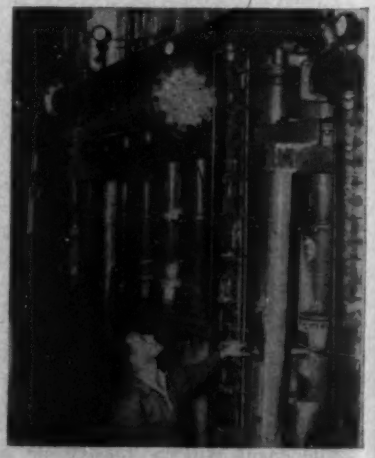
In a report to THE PAPER INDUSTRY, Powell River has declared, "The average dirt count of all the rotogravure has been greatly reduced. The rejects from the secondary cleaner amount to 0.6 to 0.8 tons per day B. D. with a machine output of 110 to 120 tons per day."

The cleaners are large hollow cones that remove dirt by centrifugal force. The Powell River units are 7 ft. in length and 12 in. in diameter at the top (or large) end. The inside is coated with a smooth plastic surface to prevent turbulence of the pulp flow through the unit.

Ten in a Line

Developed by Howard Smith Paper Mills Ltd., the centri-cleaners are manufactured by the Bauer Bros. Co. at Springfield, Ohio.

In the Powell River installation,



POWELL RIVER engineer, W. Reynolds, checks the new centri-cleaner installation

10 centri-cleaner units are located between the fan pump and the paper machine headbox. The cones have been installed in a compact "in line" assembly against the back wall of the machine room. All the pulp entering the machine system is passed through nine primary units in parallel, which reject impurities continuously from the Supertone pulp. One secondary centri-cleaner cone receives primary rejects; the highly concentrated impurities from this unit are discarded.

In operation, the mixture of pulp and water is pumped into the top of the cone at 50 psi. The rotary action causes the mixture to spiral down the cone; the heavy particles of dirt are thrown free of the pulp suspension and are rejected continuously through a small nozzle at the bottom of the unit. The bulk of the mixture returns up the center of the cone and out through a pipe at the top.

Cheboygan Mill Plan for Reorganization Approved

Federal Judge Thomas F. Murphy of New York has approved a reorganization plan for the closed Paper Corp. of America paper mill Cheboygan, Mich. According to Cheboygan City Attorney Francis Lindsay, the plan has been referred to creditors.

Mr. Lindsay declared that the deadline for voting on the part of the creditors was to be between January 15 and 30.

Steiner Linen & Supply Co. of Chicago has been seeking to buy the plant. It has been rumored that the Steiner price offer will be approved.

MacMillan & Bloedel to Spend $30,000,000 at Port Alberni, B. C.

Major expansion at its Port Alberni, B. C. operations has been announced by MacMillan & Bloedel Ltd. The $30,000,000 project will include an increase in capacity for the existing pulp mill and the construction of two new mills, one for the production of newsprint and the other for the production of kraft papers and container board.

The action is in fulfilment of an expansion commitment made recently by the firm when it was granted a forest management license on the west coast of Vancouver Island.

The proposed newsprint mill would have a rated capacity of 300 tons daily, with provision made for the later installation of a second machine to double this figure.

43,000-POUND vacuum filter hangs in mid-air during installation project for Bird & Son's new asphalt dispersion unit. In spite of the size of rig and machinery, this was a precision job

Operation Big Lift at East Walpole

The second asphalt dispersion unit has been put into operation at Bird & Son inc.'s East Walpole, Mass. mill. It is a so-called "C" unit capable of handling 80 daily tons. Any one of the various paper stocks being produced by Bird can be treated.

The vacuum filter used to dewater the stock was built by Improved Machinery Inc. at Nashua, N. H. It immediately precedes a Davenport press.

Following the press, from which it emerges at a consistency of 65 per cent water, the stock is sent through a preheater furnished by American Defibrator Co. It is dispersed with American Defibrator equipment and then quenched in an American Defibrator cyclone.

80-FOOT BOOMS hoist more than 20 tons as the vacuum filter dangles in mid-air just prior to its installation in the building at right

K-C Renames Subsidiaries

Two subsidiaries of Kimberly-Clark Corp. have been renamed to give them closer identification with the parent company. William Bonifas Lumber Co. is now known as Kimberly-Clark of Michigan Inc., while North Star Timber Co. is Kimberly-Clark of Minnesota Inc. No merger or reorganization is involved.

Vanity Fair Operates Former Diamond Match Plant in New York

Vanity Fair Mfg. Co. has reported that it will manufacture paper products in facilities recently purchased from Diamond Match Co. at Plattsburg, N. Y. Charles Wemyss, Vanity Fair's president, made the announcement soon after signing two new union contracts.

The Vanity Fair facilities—representing about 75 per cent of Diamond Match's former holdings

in Plattsburg—were purchased by interests headed by Mr. Wemyss' father, Charles C., who is associated with paper mills in New York and Canada.

CIP Plans Further Boost in Paper Output Capacity

By 1956 the annual newsprint production capacity of Canadian International Paper Co. will reach 920,000 tons, a 9 per cent gain over the record of 845,000 tons in 1954. This according to Vernon Johnson, president, who added that the original design capacity of the firm's three newsprint mills was 570,000 tons.

"When this current program is completed," Mr. Johnson declared, "we will have increased the capacity of our newsprint machines by 60 per cent through technological improvements and increases in efficiency. In effect, we will have added productive capacity equivalent to a large new mill capable of producing 1200 tons per day but without the necessity of adding a single newsprint machine."

Gardner Container Starts Operations at Akron

Gardner Board & Carton Co. of Middletown, Ohio, has announced the start of operations of its new subsidiary at Akron, Gardner Container Co. President of the new firm is Melvin E. Barthen. Production will include corrugated fiber boxes and shipping containers.

It was originally planned that Gardner Container would be located at Medina.

All new equipment is being installed in the leased factory building and will include printing, creasing and slitting presses; taping and stitching machines, and die cutting machines.

Anglo-Canadian Sask. Forest Option Extended

Anglo-Canadian Pulp & Paper Mills Ltd. has been granted an extension on its option on 2000 sq. mi. of Saskatchewan pulpwood forest near Prince Albert. (The firm is controlled by Daily Mirror Newspapers Co. Ltd. of London.)

The extension gives the company an additional three months on an option it has held for a year to complete investigation of pulp mill possibilities in the region. If Anglo-Canadian exercises the option, it must start construction of a proposed $30,000,000 mill by June 1955 and spend $5,000,000 during the first year.

PI Expansion Notes

New Brunswick International Paper Co. has installed a 5000-kw turbine and steam plant at Dalhousie, N. B., boosting power installations at the newsprint mill to 21,750 kw. Designed to use New Brunswick coal, the unit is a product of Allis-Chalmers Mfg. Co. According to New Brunswick International, the installation will make possible a 30,000-ton increase in the annual output of groundwood pulp.

Bathurst Power & Paper Co. Ltd. has formed a container division with the acquisition of Canadian Wirebound Boxes Ltd. The new division, with plants in Toronto and Montreal, will market industrial containers.

Robert Gair Co. Inc. has acquired the property, assets and business of Harvey Container Corp. of Plymouth, Mich. The acquisition, which will be known as the Harvey Container Div., includes manufacturing area of about 70,000 sq. ft.

Unofficial reports are that **Scott Paper Co.** may expand its operations in the New England area.

Hudson Pulp & Paper Corp. has undertaken a research expansion program which will include construction of a laboratory at Palatka, Fla., and purchase of buildings at South Windham, Maine. The Palatka building, designed by J. E. Sirrine Co., will be a brick structure of approximately 75,000 sq. ft. and will be devoted to research in product development, by-product utilization, raw material recovery and improved papermaking and pulp processing techniques. The South Windham expansion will house the mechanical research department.

Central States Paper & Bag Co. has opened a plant in Palatka, Fla., to supply paper and plastic bags to the southeastern states. It will be supplied kraft paper by the mill of Hudson Pulp & Paper Corp., which is just three miles away.

Marathon Corp. has purchased the manufacturing equipment of the cup division of Miro Paper Products Corp. of Brooklyn, N. Y. Marathon will install the machinery in its Oswego, N. Y. plant, where paperboard hot drink cups will be made.

Fibreboard Products Inc. of San Francisco has purchased 14 acres of industrial property in Denver as the site of a new carton plant. The one-story building will cover 30,000 sq. ft. One of the first items to be produced will be Pure-Pak milk cartons, and for this purpose Ex-Cell-O converting machines and pre-fold gluers have been ordered.

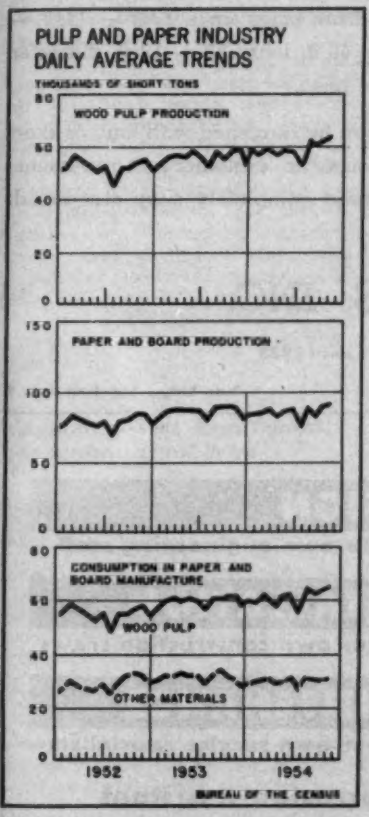
U. S. Paper and Paperboard Production

	Nov. 1954 (tons)	Oct. 1954 (tons)	Nov. 1953 (tons)	Total 1953* (1,000 tons)	Total 1948 tons)
Paper and Board, total	**2,281,837**	**2,367,454**	**2,185,835**	**26,459**	**21,697**
Paper, total	**997,132**	**1,024,834**	**949,280**	**11,394**	**11,119**
Newsprint	107,694	109,351	91,571	1,069	876
Groundwood paper (uncoated)	72,907	72,398	61,685	771	772
Printing and converting (coated)	100,647	104,384	102,591	1,182	809
Book paper (uncoated)	128,877	134,357	131,797	1,623	1,570
Fine paper (writing, cover and text, bristols, thin paper and other)	116,306	119,161	106,106	1,290	1,141
Coarse paper (unbleached Kraft, glassine, greaseproof, vegetable parchment and other)	297,084	301,887	299,817	3,398	3,027
Special industrial paper (including absorbent)	47,598	44,380	42,250	553	415
Sanitary tissue stock	105,656	116,544	102,763	1,277	983
Tissue paper (except sanitary and thin paper)	20,363	22,357	19,700	231	205
Paperboard, total	**1,028,292**	**1,066,551**	**1,020,505**	**12,220**	**9,366**
Container board, total	572,183	587,652	573,922	6,613	5,079
Liners	387,111	396,532	397,799	4,411	3,347
Corrugating material	161,615	169,526	154,473	1,906	1,376
Container chipboard	23,457	21,594	21,650	296	319
Bending Board	293,729	307,839	288,697	3,566	2,153
Nonbending board	76,642	80,376	78,032	898	597
Special paperboard stock	79,303	83,384	78,879	1,071	1,568
Cardboard	6,435	7,300	5,975	72	87
Wet machine board, total	**10,958**	**10,779**	**10,494**	**155**	**142**
Construction paper and board, total	**245,455**	**265,290**	**205,556**	**2,688**	**2,591**
Construction paper	112,874	125,061	96,752	1,312	1,321
Hardboard and insulating board	132,581	140,229	108,804	1,376	1,270

(*) Preliminary report. *Source: U. S. Department of Commerce.*

November Pulp, Paper and Board Production

Paper and board production during November amounted to 2,281,837 tons, according to a report released by the Bureau of the Census. This is more than 4 per cent above the 2,185,835 produced in November a year ago. Paper production amounted to 997,830 tons, 5 per cent above the 949,280 tons of November a year ago. The output of paperboard during the month was 1,028,292 tons, reflecting a 1 per cent increase from the production of 1,020,505 tons reported for November 1953.



Pulpwood receipts at the pulp mills during November amounted to 2,524,716 cords, with consumption at 2,549,739 cords. Month-end inventories declined to 4,822,983 cords.

Wood pulp production during November amounted to 1,397,501 tons, as compared to 1,489,290 tons produced in November a year ago.

Wood pulp inventories at the end of November at the paper and board mills amounted to 517,365 tons, showing an increase of more than 4 per cent during the month. Month-end stocks at the pulp mills were 184,831 tons.

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*Registered Trademark. *Only* Garlock makes LATTICE BRAID rod and shaft packings.

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4. Does *not* unravel; thus makes better, more uniform rings
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Put Garlock LATTICE BRAID Packing to work for your company. All the braided strands of this unique packing are lattice linked together into one structural unit. The strands hold together even when the packing is worn far beyond the limits of wear of ordinary braided packings.

LATTICE BRAID is made from flax, cotton, asbestos, wire-inserted asbestos, Teflon, and asbestos with Teflon impregnation—for various types of services.

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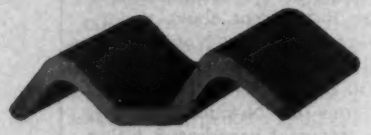
2-F.M.P. 12' × 67-½' barking drums, similar to cut above, installed at The Buckeye Cellulose Corp., Foley, Fla.



M-Bar—Hot Rolled

Exclusively used in F.M.P. drums. Welded and riveted to heavy ship channels.

148 — barking drum sales since 1947 — (118 — 12 ft. diameter x 45 ft. long; 22 — 12 ft. diameter x 67½ ft. long; 11 misc.)

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Easily-installed units for high-efficiency air movement in all duct systems. Direct-driven types for atmospheres within safe motor operating limits or belted models for hazardous fumes, vapors and excessive temperatures. Sizes 12" to 84" with 2, 4, 6, or 7 blades. Capacities to 120,000 C.F.M.

other models for every air-moving requirement

All Aerovent Fans are rated in accordance with the Standard Test Code and U.S.D.C. Comm. Std. CS178-51.

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ALLIED NEWS

Personnel Changes Announced in Dorr-Oliver Merger

Effective January 1, the Dorr Co. of Stamford, Conn., and Oliver United Filters of Oakland, Cal., completed arrangements whereby the two firms were merged as Dorr-Oliver Inc. Headquarters are maintained at Stamford.

As a result of the merger, the following personnel changes have been effected: C. W. Crumb, former sales promotion manager of Oliver United, assumes like responsibility for Dorr-Oliver; C. M. Comstock, Dorr assistant advertising manager, becomes assistant sales promotion manager for the new firm; A. L. Morris, Dorr advertising manager, has been named director of public relations (including product and technical publicity) for D-O, and R. D. Forger, technical assistant in the Dorr advertising department, is now doing technical publicity for Dorr-Oliver.

Appleton Wire Buys Control of International Wire

The purchase of a controlling interest in International Wire Works of Menasha, Wis., has been completed by Appleton Wire Works Inc. of Appleton. The former firm makes wire cloth for the pulp and paper industry; it will continue to operate as a separate company with no personnel or sales changes contemplated.

International Wire was organized at Menasha in 1915. The plant contains 14 fourdrinier looms. Since World War II, new equipment has been installed to make possible the weaving of wires for the new wider paper machines.

Asten-Hill Building Plant in South Carolina

Asten-Hill Mfg. Co. has announced the expansion of facilities for the manufacture of dryer felts with the construction of a plant at Walterboro, S. C. Like the main plant at Philadelphia, the operation has been specifically designed for the manufacture of asbestos dryer felts.

Construction is underway. Early operation is expected.

Kamyr Appointments

G. L. M. Hellstrom of Montreal has been elected honorary vice president of Kamyr Inc. in recognition of his "services in introducing and developing Kamyr equipment in the United States and Canada."

In another Kamyr appointment, Harry Glenn of Paper Machinery Ltd., Montreal, has been elected a director of the firm. Paper Machinery represents Kamyr in Canada.

Nils Klykken has been elected Kamyr's vice president in charge of engineering. An authority on Kamyr bleaching and bleaching equipment, he will continue to assist and advise the Sandy Hill Iron & Brass Works and Paper Machinery Ltd. on all questions pertaining to Kamyr bleaching plants and machinery.

FEATURE OF the mid-winter sales meeting of Albany Felt Co. at Albany, N. Y., was a panel discussion on the topic, "What is Good Felt Performance." Participants included (l to r) Gus Ostenson of Crown Zellerbach Corp. at Camas, Wash.; C. D. Coffman of Chesapeake Paperboard Co. at Baltimore; James E. Smith Jr., assistant sales manager of Albany Felt (moderator), and Roy Nilsen of Northwest Paper Co. at Cloquet, Minn.

Worthington Changes

Walter H. Feldmann, for the past four years vice president for sales, has been named executive vice president of Worthington Corp. He succeeds Edwin J. Schwanhausser, who was recently elected president.

Mr. Feldmann, who has been with Worthington since the purchase of Electric Machinery Mfg. Co. of Minneapolis in 1944, will be succeeded as vice president for sales by Thomas J. Kehane, formerly assistant vice president and general sales manager.

In other Worthington changes, William A. Meiter, central sales manager, has been promoted to general sales manager. He is being succeeded by Clarence S. Wentworth, formerly Detroit manager.

Allied Personalities . . .

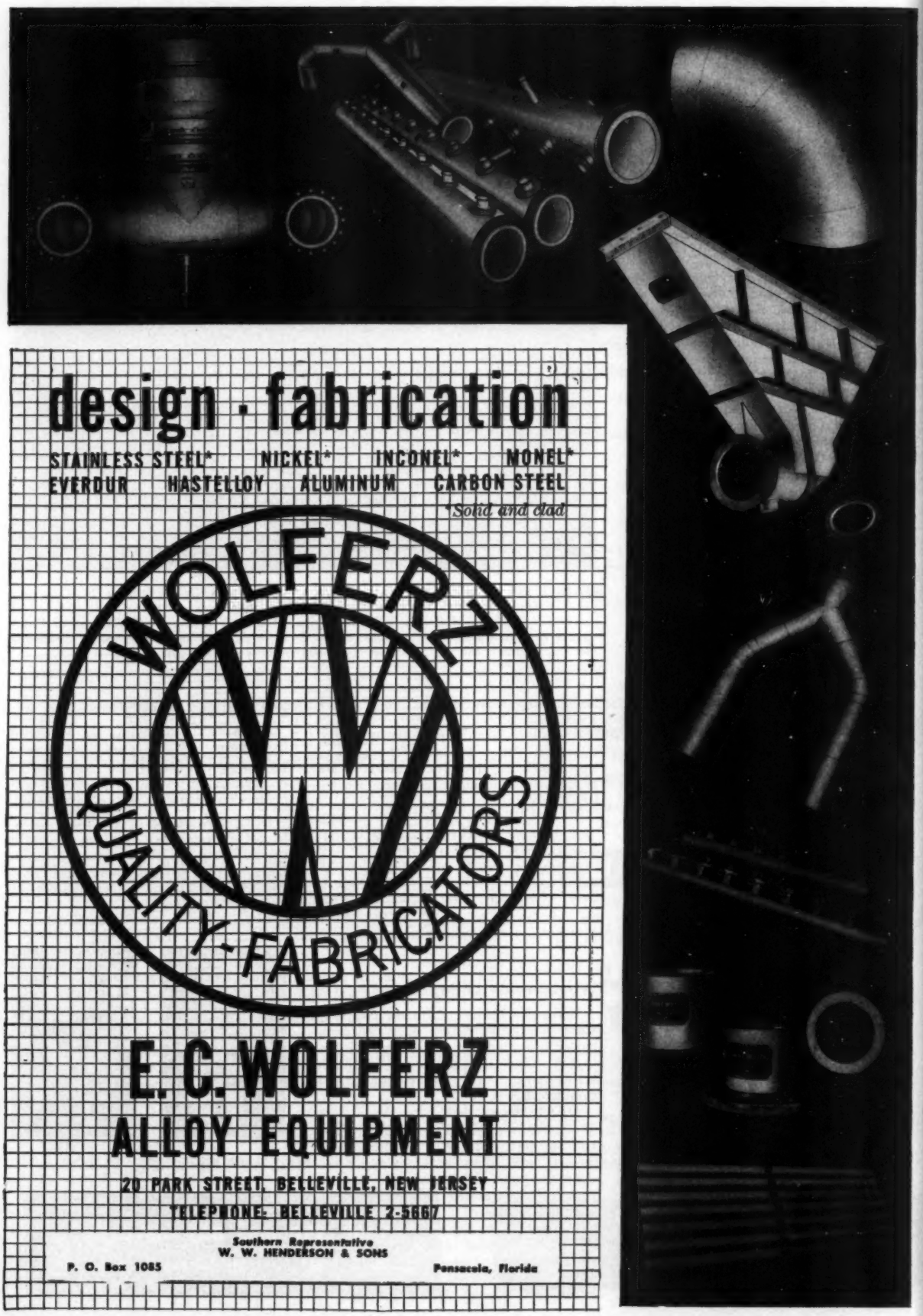
Philip H. Goldsmith has resigned from Pusey & Jones Corp. following a 15-year association. He is well known throughout the industry for his activities in the design and sale of paper machines.

Howard F. Brown of Newfane, N. Y., has been elected vice president in charge of manufacturing for Lockport Felt Co. He has been with the firm since 1926 and became general superintendent of mill operations in 1951.

H. F. Brown

S. D. Payzer

S. D. Payzer has been named vice president in charge of engineering for D. J. Murray Mfg. Co., Wausau, Wis. He has been associated with D. J. Murray since 1923 and was made chief engineer in 1926.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STAINLESS STEEL* NICKEL* INCONEL* MONEL*
EVERDUR HASTELLOY ALUMINUM CARBON STEEL
*Solid and clad
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SAFETY NEWS

PRESENTATION OF the mill manager's shield at the Edmundston, N. B. mill of Fraser Companies Ltd. was made by Marcel Barsalou (r), asistant mill manager, to Clark Campbell (l), assistant superintendent of the groundwood pulp department, and H. G. Larlee, department superintendent

Groundwood Pulp Dep't. Wins Safety Shield in Fraser Competition

The groundwood pulp department at the Edmundston, N. B. mill of Fraser Companies Ltd. has been awarded the mill manager's safety shield for 1954. This marked the third time that the department had received the award since 1947, its record being no lost-time accidents in more than 88,000 man-hours.

The shield is awarded each year by the mill manager to the department with the lowest accident record. (Three other mill departments also achieved no-accident records, but in each case the number of man-hours was lower than for the groundwood department.)

Middletown Employees Win Gardner Contest

More than 1000 Middletown, Ohio employees of Gardner Board & Carton Co. and Manchester Machine Co. have won the 1954 safety title in competition with an equal number of Gardner employees at Lockland.

Members of the winning "team" were treated to a roast beef dinner to mark their accomplishment.

Gardner's Middletown operations—including Manchester Machine—had an accident frequency rate of 2.2 for the year. At the same time, Lockland's frequency rate was 3.7. There were four lost-time accidents at Middletown in about 2,000,000 hours worked and eight at Lockland for about the same number of hours.

The over-all rate of Gardner has been steadily decreasing. In 1952 it was 13.6; in 1953, 7.1, and in 1954, 2.5.

Nine-Month Report of Southern Ass'n. Shows Steady Rate Reduction

Four member mills of the Southern Pulp & Paper Safety Association reported accident frequency rates of 0.00 for the first nine months of 1954. The over-all rate for the 58 plants competing in the mill division was 7.57. This is down considerably from the 8.52 of 1953 and the 9.78 of 1952.

The perfect records were achieved by: Crossett Paper Mills, Crossett, Ark. (1,198,796 man-hours); Buckeye Cotton Oil Co., Memphis, Tenn. (897,105); Certain-Teed Products Corp., Savannah, Ga. (346,883), and National Container Corp. of Virginia, Big Island (333,476).

Two other mills had rates of less than 1.0: Gulf States Paper Corp., Tuscaloosa, Ala (2,579,858) and Sonoco Products Co., Hartsville, S. C. (2,347,253).

Bag plants reporting to the converting division showed a frequency rate of 4.95 for the nine-month period, compared to 12.12 for 1953 and 8.78 for 1952. Among the 11 member plants, two had perfect scores: Gulf States Paper (604,584 man-hours) and Kraft Bag Corp., St. Marys, Ga. (390,775).

Only one box plant in the converting division recorded a 0.00 rate: St. Joe Paper Co. of Port St. Joe, Fla. (107,427 man-hours). The nine-month over-all rate for box plants was 11.61. In 1953 it was 14.25 and in 1952, 13.96.

The Mead Corp. at Lynchburg, Va., was the lone perfect score reported in the woods operations division. Mead worked a total of 2725 man-hours. Second was Union Bag & Paper Corp. at Savannah, which had a rate of 10.40 in 394,312 hours. The woods opertions as a whole showed a frequency of 21.27 for the first nine months, compared to 22.95 in 1953 and 20.75 in 1952.

Abitibi's Safety Drive Reduces Mill and Woods Accidents More than 30%

Lost-time accidents in the 11 mills and six woods divisions of Abitibi Power & Paper Co. Ltd. have been sharply reduced as a result of the firm's safety education program. The program was intensified last year at the instigation of D. W. Ambridge, president.

Mr. Ambridge proclaimed 1954 "Safety Year" for all divisions, and October was set aside as "Safety Month." Results for the first 10 months were as follows:

Mills—in the first 10 months, a decrease of 35 per cent from 1953; October, a 61 per cent decrease.

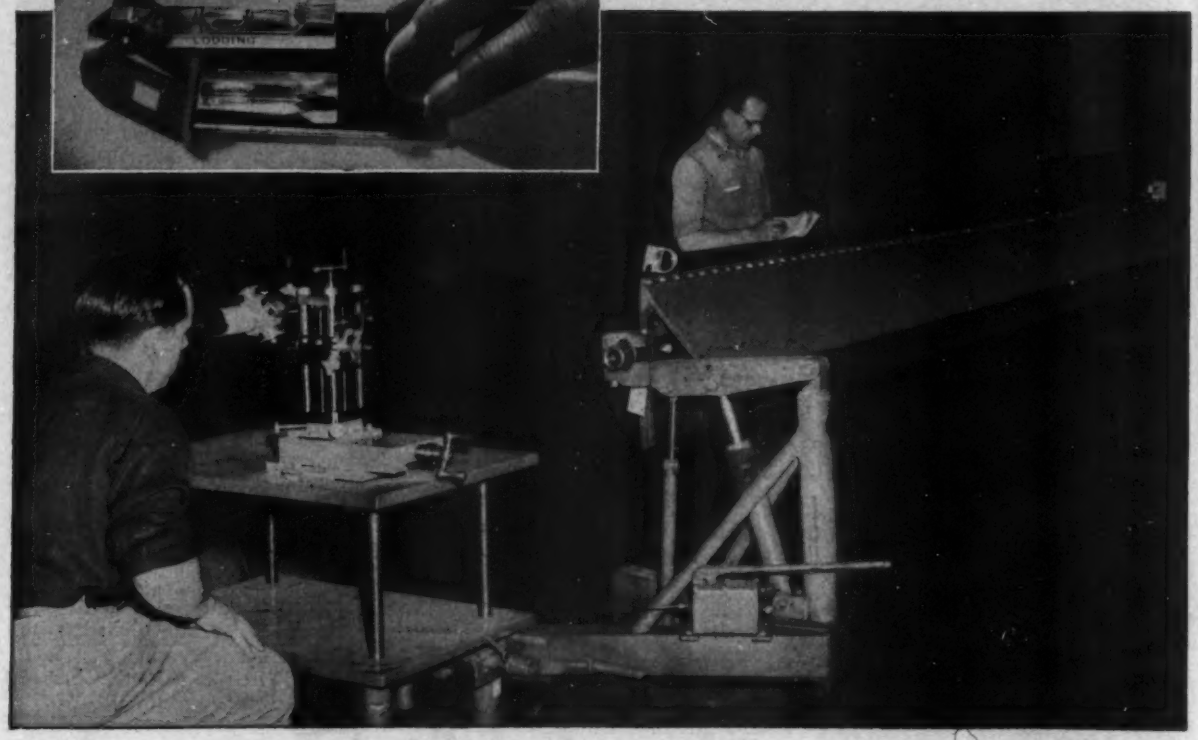
Woods—in the first 10 months, a decrease of 31 per cent from 1953; in October, a 61 per cent decrease.

During the year, the campaign in divisions in Ontario, Quebec and Manitoba has been constant. A company spokesman has declared, "It will continue in high gear." Special posters have been designed and distributed throughout the woods and mills. A series of safety lectures has been presented for the benefit of all employees.

Safety Clothing

At the same time, Abitibi has sponsored a specialized campaign to induce the rank and file in the woods to wear safety clothing. The firm has made the use of safety helmets obligatory for all supervisory personnel. The promotional campaign is succeeding; some 1400 employees have already adopted the latest type of helmet, which the company provides free of charge, the men being responsible only for providing winter and summer linings. Abitibi has featured in its stores special boots for woods workers. The boots incorporate hard toes and steel mesh protection.

LODDING



In your plant and in ours, every known test is made to make certain your Doctor works to Lodding efficiency. In our plant—optical check for straightness with Doctor in working position is one of many made here. In the field—special level (top) on your machine insures perfect alignment. These are among the steps taken by Lodding to make your Lodding Doctor go to work for you, ready for the kind of action your production requires.

LODDING ENGINEERING CORPORATION

WORCESTER, MASSACHUSETTS

NAMES in the NEWS

A. B. Moody

D. F. McCall

Moody Retires at Everett

Anson B. Moody has retired as vice president and general manager of Everett Pulp & Paper Co. in Everett, Wash. A 28-year veteran with the firm, Mr. Moody is being succeeded by Donald F. McCall, at one time director and vice president of Racquette River Paper Co. of Potsdam, N. Y.

Mr. Moody joined the Everett staff in 1927 and advanced through the sales and order departments until in 1931 he was named assistant secretary. In 1942 he was made vice president, treasurer and assistant manager. He became vice president and general manager in 1951.

Mr. McCall joined Everett Pulp & Paper in July 1953. He was named in 1944 as a consultant to the pulp and paper division of the War Production Board. In 1952 he was elected chairman of the Sulphite Paper Manufacturers Association Inc.

Mead Promotes Shannon

Vinson K. Shannon has been made manager of the Sylva Div. of the Mead Corp. at Sylva, N. C. He succeeds J. Ramsey Buchanan, who has managed the mill since 1948 and is giving up active management in anticipation of his retirement in a few years.

Mr. Shannon joined the firm 25 years ago as a sixth hand at Lynchburg, Va., becoming a machine tender three years later and tour foreman in 1939. During World War II he assumed supervision of the pulp mill. In 1945 he was made assistant general superintendent of the Heald Div. in Lynchburg and superintendent of the laminated board, finishing and tube winding departments. He was transferred to Sylva as assistant division manager in 1951.

Mr. Buchanan has managed Mead mills since 1934, when he became head of the Harriman (Tenn.) Div. He has been with the firm since 1928.

V. K. Shannon

J. E. Burdsall

Burdsall Advanced by Crystal Tissue

Crystal Tissue Co. of Middletown, Ohio, has appointed John E. Burdsall to the post of general superintendent. He was formerly assistant general superintendent.

Mr. Burdsall joined the firm in 1934 and has held responsibility in both the technical and operating departments. A registered professional engineer, he has served as chairman of the Ohio Section of Tappi and as chairman of the Miami Valley Division of the Superintendents Association.

Mead Succeeds Conway at Sulphite Research League

Stanton W. Mead, president of Consolidated Water Power & Paper Co. at Wisconsin Rapids, Wis., has been elected president of the Sulphite Pulp Manufacturers' Research League. The League is located at Appleton and is devoted to cooperative research on the utilization of sulfite pulping by-products and stream improvement.

Mr. Mead succeeds J. M. Conway, president of Charmin Paper Mills at Green Bay, who requested that he be permitted to retire after holding the presidency for 15 years. Mr. Conway organized the League in 1939.

Elected chairman of the League's technical committee, which is comprised of the research chiefs of the 14 member mills, was John C. Wollwage, director of technical research for Kimberly-Clark Corp. at Neenah. Henry A. Rothchild, assistant to K-C's vice president of manufacturing, was elected a trustee to replace Ernst Mahler, also of Kimberly-Clark, who has retired. Gilbert Heath, mill manager at Falls Paper & Power Co. in Oconto Falls, was elected a trustee, replacing Forrest Brainerd. Mr. Brainerd was recently transferred from Oconto Falls to Chester, Pa., to become special assistant to the vice president of Scott Paper Co.

Albert S. Redway has been named general manager of the research and development department of the Paper Container Div. of Continental Can Co. He was formerly president of American Paper Goods Co. of Kensington, Conn., which was recently acquired by Continental Can and is now being integrated into the Paper Container Div.

A. S. Redway

C. F. Theobald

Charles F. Theobald has been appointed general traffic manager of Robert Gair Co. Inc. He joined the firm as associate general traffic manager more than two years ago.

Sutherland Paper Sets Up New Supervisory Post

Sutherland Paper Co. of Kalamazoo, Mich., has announced several changes in production personnel, including the creation of a new post of general superintendent of all Kalamazoo converting divisions.

L. W. Sutherland Jr., vice president

Names in the News . . .

and assistant production manager, has been given direct responsibility for all converting operations in Kalamazoo. He was formerly treasurer of the firm.

He will be aided by Ivan Forster, who has been appointed general superintendent. Mr. Forster has been with the company more than 25 years and was formerly superintendent of Division 2, East Side plant. His new position has been set up to further operating efficiency and to aid in establishing uniform practices.

Succeeding him as Division 2 superintendent is Frank Kolter, who was formerly superintendent of Division 5, North Side. Gaylod Beason becomes new Division 5 superintendent. He was previously assistant superintendent.

Carl W. Guelcher, for 32 years on the staff of Hammermill Paper Co., has joined Nekoosa-Edwards Paper Co. at Port Edwards, Wis. He will head the newly formed statistical department, which is a part of the firm's finance division. The function of the department will be to coordinate all internal statistical information.

C. W. Guelcher

Hudson Pirie

Hudson Pirie has been appointed harbor and shipping superintendent for Powell River Co. Ltd. at Powell River, B. C. He was at one time expediter in the engineering department.

J. E. McCaffrey has been appointed assistant general manager in charge of woodlands operations at the Southern Kraft Division of International Paper Co.

Walter E. Anderson has been named vice president in charge of production for Edgewater Paper Co. in Menasha, Wis. He fills the vacancy caused by the recent death of Harry A. Johnson. Mr. Anderson has been with the firm since 1927 as traffic manager and assistant superintendent.

Dr. Paul M. Goodloe has been named to the newly created position of director of control for Brown Co. in Berlin, N. H. He will be responsible for maintaining uniform products within the range of customer requirements and for assisting the firm's program of process improvement.

Elbert C. Lathrop has retired as head of the agricultural residues section at the U. S. Regional Research Laboratories in Peoria, Ill. An expert in pulping straws, sugar cane bagasse, etc., Dr. Lathrop was formerly director of research and vice president of the Celotex Corp. and technical director for Crown Zellerbach Corp.

Gilbert L. Heath has been named vice president of Falls Paper & Power Co., a Scott Paper Co. subsidiary in Oconto Falls, Wis. He was formerly plant manager.

Carl H. Hartman has retired as vice president in charge of multiwall bag development for St. Regis Paper Co. He will continue to serve the firm in a consulting capacity. In 1910 Mr. Hartman became associated with Valve Bag Co., which later became part of St. Regis.

NECROLOGY

Bronson B. Tufts

B. B. Tufts

Bronson B. Tufts, office and production manager for the advertising department of Hercules Powder Co. and founder and editor of *The Papermaker*, died December 27 at his Arden, Del. home.

A veteran of 39 years with Hercules, Mr. Bronson was widely known in the printing and papermaking fields. Published twice a year by Hercules, *The Papermaker* was ranked among the finest papers in the country from a standpoint of typography. It contained articles written by internationally known experts in the paper industry.

R. W. Croucher

R. W. (Bill) Croucher, retired safety officer of Minnesota & Ontario Paper Co. and prominent in the National Safety Council's Pulp and Paper Section, died December 24. Since his retirement December 31, 1953, he and Mrs. Croucher had made their home near Wilkinson, Minn.

Born February 20, 1887, in Boston, Mr. Croucher found early employment in the logging camps of Maine and New Brunswick. He moved to Minnesota in 1908 and homesteaded near Steamboat Lake. From 1908 to 1923 he worked in northern Minnesota logging camps.

He joined the staff of Mando as a camp supply officer in 1923. He later became assistant to International Lumber Co.'s camp auditor and in 1927 became trainmaster for the M. D. & W. Ry., becoming the line's general superintendent in 1931.

Mr. Croucher was transferred to the Mando personnel office in 1937 and was given responsibility for safety and health activities. Six years later he was named head of the newly created safety department. During his 10 years in office, Mando's accident rate was reduced by 75 per cent.

E. L. Crocker

E. L. Crocker, regarded by many as the dean of newsprint sales executives in America, died January 1 in Sarasota, Fla., from injuries suffered in an automobile accident. He was 70.

Mr. Crocker was former president of International Paper Sales Co. Inc. of Montreal.

From 1918 to 1930 he was successively managing director of Canadian Export Co., St. Lawrence Valley Paper Co. and Canadian Newsprint Co. In 1931 he went to New York, N. Y., as a vice president of International Paper Co. Seven years later he was made vice president of International Paper Sales, becoming presi-

SANDLOT PITCHER-1910

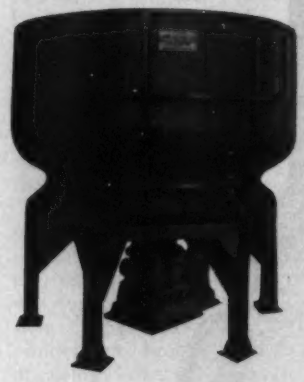
That's big, amiable Ed Vanderlinden. As a kid he loved baseball, and winter sports, too. Later he hit the trenches with the First Division. And, for more than thirty years now, Ed's vigor and enthusiasm have been devoted to making good felts better. Today he's a specialist in wool carding—a vital operation where the strength of Appleton felts is born.

Ed Vanderlinden is typical of the steady, long-experienced workers at the Appleton Woolen Mills . . . a 73-year-old organization dedicated to development, progress, and the production of ever finer felts—for the finest paper-making.

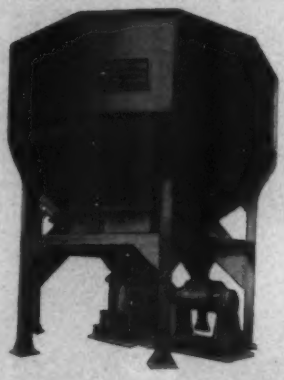
APPLETON WOOLEN MILLS

APPLETON, WISCONSIN

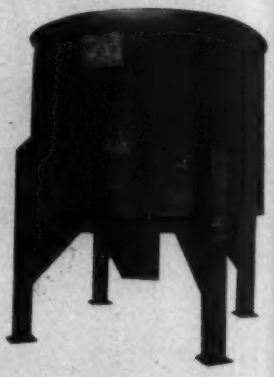
World's Leader in Pulper Building Experience and in Pulper Sales



*Hydrapulper**—cast iron tub—continuous or batch—full range of sizes.



Hydrapulper — welded steel stainless, or clad tub—continuous or batch—18" dia. to 20' dia.

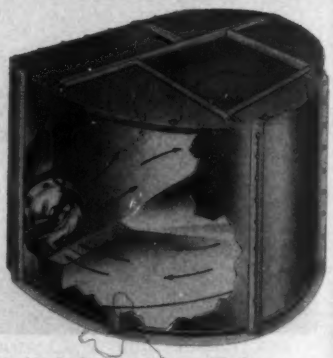


HC—low cost unit, can be furnished coated lined.

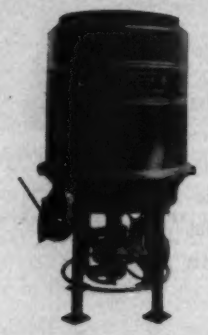
Hydrabeater — combination pulper-refiner.

PULPERS FOR EVERY CONCEIVABLE PULPING REQUIREMENT

Pulping—deinking—stock blending—color or chemical mixing—broke handling.



Hydraslusher—same as Hydrabeater without refining element. Pulper for low head room and cramped space locations.



Laboratory Hydrapulper—for pilot plant use. Can be bought or rented. Mobile units also available.

ONE TO GIVE YOU THE EXACT DEGREE OF DEFIBERIZATION YOU NEED AT LESS HP/TON PER DAY

Also available, a special tile lined Hydrapulper not shown.

Broke Hydrapulper—for practically any broke handling application.

BLACK-CLAWSON

SHARTLE BROS. MACHINE DIVISION • MIDDLETOWN, OHIO

*Trademark

Necrology . . .

dent in 1947. He retired in 1952 and made his home in Florida.

Frank P. Knack

F. P. Knack

Frank P. Knack, Midwestern district manager for F. C. Huyck & Sons of Rensselaer, N. Y., died December 21 in Saratoga Springs.

Mr. Knack had represented Huyck since 1923 and was widely known in the paper and board industries. He first served mills in the southern states and later in Illinois, Ohio, Michigan, Iowa, Kansas, Oklahoma, Colorado, Missouri and Indiana. A native of Gloversville, N. Y., he had resided in Geneva, Ill., for many years.

P. J. Murer

P. J. Murer, 70, former general manager of sulfite mills for Canadian International Paper Co., died January 1 after a short illness. A native of Norway, he came to the United States in 1907 and joined Great Northern Paper Co. in Millinocket, Maine.

Moving to Canada in 1908, Mr. Murer was employed by Riordan Paper Co. He was later named manager of the Hawkesbury mill and in 1921 became manager of the Kipawa mill. He retired from his post at Canadian International in 1951.

Frank A. Augsbury, 89, president of George Hall Corp. of Ogdensburg, N. Y., died at his home December 29. He became president of the Hall firm in 1918. An amalgamation of coal, pulp and shipping companies, the firm operates in both the United States and Canada.

Edward R. Hankins, 72, founder of Hankins Container Co. and chairman of its executive committee, died December 20. Prior to founding his own firm in 1933, he was vice president in charge of manufacturing for Container Corp. of America.

William C. Frye, a director of Chain Belt Co. and its former president, died recently. He had been associated with the firm 60 years.

ASSOCIATION NEWS

Mill Communications to be Subject of Bolton Contest

John W. Bolton & Sons Inc. of Lawrence, Mass., has announced that the subject for the Eighth Bolton Award will be, "The Value of Better Mill Communications."

The annual competition, which is open to all employees of North American pulp and paper mills, is sponsored by the Superintendents Association and John W. Bolton.

Thirteen cash prizes totaling $3250 are to be awarded as follows: three national prizes of $1000, $750 and $500, and 10 divisional prizes of $100 each.

Three Maine Professors Get Tappi Posts

Three members of the Department of Chemical Engineering at the University of Maine at Orono were named to important positions at a recent meeting of the Engineering Division of Tappi. The meeting was at Philadelphia.

Prof. Lyle C. Jenness, head of the department, was appointed chairman of the national association's engineering committee. Prof. Richard E. Durst was made a member of the hydraulics committee, while Prof. Andrew J. Chase was named to the chemical engineering committee and chairman of a subcommittee.

APA to Sponsor Research in Hardwoods at Syracuse

At a recent board meeting, the American Pulpwood Association voted to sponsor a research fellowship at the State University of New York College of Forestry in Syracuse. The grant will be for study toward the development of a Directory of Research in Growing and Harvesting Pulpwood.

According to the announcement, "The directory will serve the pulpwood industry and public agencies as a reference guide to the progress of experimental work throughout the country and as a more effective medium of coordination of efforts in this field." The announcement was made jointly by W. S. Bromley, executive secretary of APA, and E. C. Jahn, associate dean of the college.

A graduate fellow, on a 12-month basis at $2400, will be appointed to assist in carrying out the project. Preference will be given applicants who have had industrial experience in pulpwood or forestry work, and who wish to work toward an advanced degree in forest research management. The graduate fellow will work under the direction of Dr. Paul Graves, who teaches forest management and administration.

Progress in Felt Making Outlined at Supts. Meeting

Felt uses and manufacturing difficulties were discussed at a recent meeting of the Michigan Division of the Superintendents Association by Earl D. Rhodes, vice president of F. C. Huyck & Sons of Rensselaer, N. Y. The gathering was at Kalamazoo.

Mr. Rhodes declared that although the finished product for paper machine use is less than 200 in. wide, the looms on which it is woven may be as much as 600 in. in width. As a result, the finished product is less than one-fourth the size of the original.

Coming Events

TAPPI

Feb. 21-24—Annual Meeting, Commodore Hotel, New York, N. Y.
March 8—Empire State Section, Metropolitan District, Fraunces Tavern, New York, N. Y.
March 8—Ohio Section, Manchester Hotel, Middletown, Ohio
March 8—Lake States Section, Elks Club, Kaukauna, Wis.
March 18-19—Southeastern Section, George Washington Hotel, Jacksonville, Fla.
March 24—Delaware Valley Section, Engineers' Club, Philadephia
March 25—New England Section, Hotel Statler, Hartford, Conn.

Other meetings

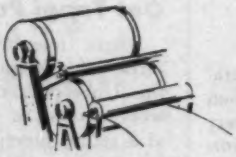
Feb. 21-24—American Paper & Pulp Association, Annual Meeting, Waldorf-Astoria Hotel, New York, N. Y.

We make a CORN STARCH to fit your every need

Whether your primary consideration is price, quality, or versatility, we make a starch that fits your requirements precisely.

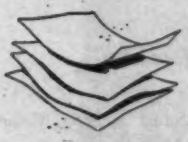
BEATER ADDITIVE

Our Amijel Brand Corn Starches are thick-boiling, pre-gelatinized starches highly preferred because of their increased cold-water dispersibility. They are widely used in the manufacture of specialty board and paper of high quality.



SURFACE SIZE

Our Eagle Brand Pearl Corn Starch is a popular starch for surface size. It is a thin-boiling starch of high fluidity. It is recommended for its desirable surface film-forming qualities and its uniformity.



LAMINATING ADHESIVES

A full line of dextrines and gums is available to meet all bonding and adhesive requirements. Our Lam-o-dex brand dextrines produce tough bonds resistant to separation. Several grades are offered, their particular use depending on the porosity of the board being used.

CORRUGATING ADHESIVE

Our Globe Brand Pearl Corn Starches and Coragum Starches... thick boiling starches are popular with corrugators. They yield low spread figures plus good bonding properties.

Investigate the advantages of Corn Starch. Call our Technical Service Department for free consultation.

CORN PRODUCTS REFINING COMPANY • 17 Battery Place, New York 4, N.Y.

FOREIGN ABSTRACTS

Determination of free soda in spent liquors from straw cooks

The determination of free NaOH in spent liquors obtained in pulping straw is difficult because of the dark color of the solutions and of indeterminate reaction products that interfere with the usual titrations.

The authors compare three different methods: (1) a conductimetric titration method used after greatly diluting the liquor; (2) a potentiometric analysis using undiluted liquor and (3) the Michel-Jaffard and Nicollet procedure (described in *Chimie & Industrie,* Special Number, p. 599 [1928]). In the third method, a large excess of $BaCl_2$ in alcohol is used; this causes the flocculation of organic matter and also serves to precipitate carbonates, silicates and phosphates. The clear supernatant liquor is then titrated with standard acid. Methods 1 and 2 check very closely, but the third method invariably gives results about 10 per cent below those of 1 and 2. Apparently, soda is occluded in the floc formed by the $BaCl_2$. However, inasmuch as many mills have no conductimetric or potentiometric equipment, method 3 is still valid, provided due correction is made for the inherent loss in NaOH. M. Chene, A. M. Ayroud, and O. Martin Borret, *Assoc. tech. ind. papetiere, Bull.,* 147-50 (1954) (in French).

Effect of surface active agents on purified pulps

The influence of various surface active agents (including Teepol X, Tergitol P28, and Fixanol VR) on the wetting properties of purified wood pulp is studied. After a series of theoretical considerations, the experimental details of the study are given. Two methods for determining the wetting power are used: (a) the rate of capillary rise in the cellulose sheet, and (b) the rate and degree of swelling of the sheet. (a) is a direct expression of wetting power, whereas (b) is the result of wetting power, together with such other factors as the swelling of individual fibers and the weakening of fiber-to-fiber bonding.

Surface active agents do *not* improve the wetting of highly purified cellulose, which already has a hydrophylic surface. However, they can greatly augment the wetting of pulps that contain such hydrophobic impurities as the resins (cf. Fig. 1) or pulps that have been rendered hydrophobic by acetylation.

Surface active agents weaken fiber-to-fiber bonding, as indicated by a study of the physical properties of treated pulp sheets. In practically all cases the mechanical strength decreases when surface active agents are used. This is shown graphically in Fig. 2. This decrease in strength is explained by the decrease in capillary attraction caused by the surface active agent.

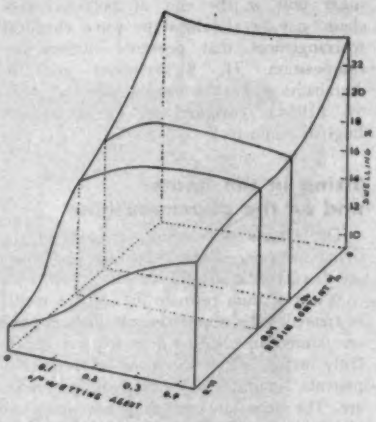


Fig. 1—Per cent swelling versus resin content of the cellulose and versus concentration of wetting agent in the aqueous phase

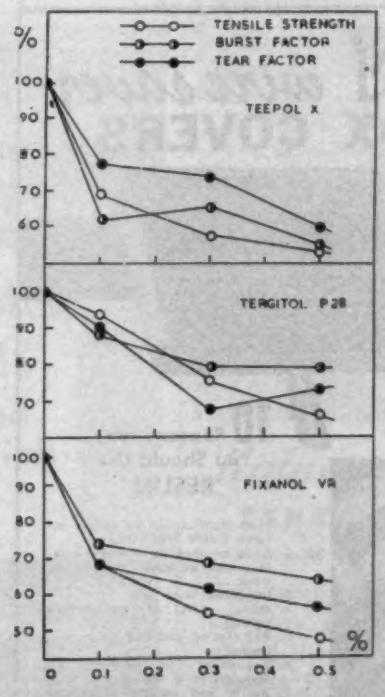


Fig. 2—The influence of surface active agents on the mechanical properties of cellulose sheet. Concentration of 3 surface active agents is given in per cent. Tensile strength, burst factor, and tear factor are calculated as per cent of the strength of the original, untreated cellulose sheet.

Furthermore, it is probable that the number of hydrogen bonds is decreased by the oriented polar attraction of wetting agents by the pulp fibers. Surface active agents seem to be attached to the cellulose by their hydrophylic group. Thus, the pulp is rendered in part hydrophobic, with a concomitant decrease in the number of hydroxyl groups which can take place in fiber-to-fiber bonding. Nine figures and 36 references are given. V. B. Nicolaysen and Karl Borgin. *Norsk Skogindustri,* 8, 260-267 (1954) (in English).

Action of slaked lime on spent sulfite liquors

At temperatures over 150° C., the organic matter in spent liquors is precipitated very rapidly with slaked lime. At about 300°, 80 per cent of the total organic matter is removed in 20 min. However, demethylation also occurs much more completely at higher temperatures. Thus, when the precipitation occurs at 350°, the organic matter (on the ash-free basis) contains only 0.5 per cent methoxyl, whereas the same liquor when precipitated with lime at 150° gives a precipitate that retains 15.2 per cent methoxyl.

This is a preliminary report; full details are to be given in the *Pulp and Paper Magazine of Canada.* Theodor N. Kleinert. Monatshefte, 85, No. 5, 1174-6 (1954) (in German).

Polish seed flax straw as a papermaking material

To evaluate the use of seed flax straw as a possible substitute for linen rags in the production of high grade papers, a series of laboratory experiments are carried out. The following raw materials are subjected to soda, lime and kraft cooks: bast fibers free from shives, bast fibers containing about 34 per cent shives, whole seed flax straw, and shives alone.

Whole seed flax straw gives unsatisfactory pulps with relatively low strength, and the alkali consumption is high. Shives alone also give poor pulps but might be used as fillers in coarse papers or board. Unbleached pulps from bast fibers free from shives are satisfactory and have higher strength than linen rag pulp (made by the use of soda or lime). Bast fibers containing about 34 per cent shives pulped by the kraft process and bleached also give a pulp of good strength, high in alpha cellulose and low in alcohol-benzene extractives; and these pulps can be used as substitutes for linen rag pulps.

The possible utilization of bast fibers free from shives and bast fibers containing

about 34 per cent shives in the Polish pulp and paper industry is discussed. Czeslaw Pustelnik and Andrzej Winczakiewicz. *Prace Inst. Celluloz-Papier*, 3, 1-14 (1954) (original in Polish) (through *C.A.*, 48, 14198).

Alkaline degradation of the hemicelluloses

The alkaline degradation of various carbohydrates by means of 0.5 *N* and 1.0 *N* sodium hydroxide at 100° is studied, using a beta-cellulose fraction from a strong spruce sulfite pulp, the hemicellulose from a spruce holocellulose, and a beechwood xylan. The following are determined after this alkaline treatment: the alkali consumption, the amount of residual polysaccharide remaining after the treatment, and the composition of the various samples as a result of the degradation.

Apparently the mannan is degraded more readily than is the glucan, and the pentosan is the least degraded. In the case of the beta-cellulose fraction, a 16 hour treatment at 100° with normal caustic soda in the absence of air results in a 57 per cent degradation. The residual material is then fractionated into a soluble portion (which represents 20 per cent of the original) and an insoluble portion (23 per cent of the original). The beta-cellulose fraction contains 52 per cent glucan, 33 per cent mannan, and 15 per cent pentosan. The soluble portion contains 11 per cent glucan, 35 per cent mannan, and 54 per cent pentosan. The insoluble portion contains 85 per cent glucan, 9 per cent mannan, and 6 per cent pentosan. In terms of the losses of the original beta-cellulose fraction, the over-all glucosan loss is 58 per cent, that of mannan is 71 per cent, and the pentosan loss is only 20 per cent.

The hypothesis which is formulated to explain why the entire polysaccharide is not destroyed by the alkaline treatment rests on the supposition that the reducing sugar unit at the end of polysaccharide chain may be stabilized by some chemical rearrangement that prevents further decomposition. H. Richtzenhain and B. Abrahamson. *Svensk Papperstidn.*, 57, 538-41 (1954) (original in German, with English summary).

Sizing in the beater and on the paper machine

The effects of varying the pH on the sizing process, studied in the laboratory, are discussed in detail.

When sodium resinate in aqueous media is treated with alum, the products formed are alumnium hydroxide and free rosin. Only on the paper machine do these components combine to yield aluminum resinate. The optimum conditions for sizing are obtained at pH 4.5, below which the degree of sizing falls off because the alum is not converted into the aluminum hydroxide, which is not stable at the higher acidity. During the actual papermaking operation on the machine, the degree to which sizing takes place in the running web depends on the amount of water. In the case of a writing paper, practically no sizing is noted when 60 per cent of the water has evaporated. Above a 65 per cent removal, the degree of sizing increases at every step in the drying process. Thus, the determination of water in the web (above a certain point) serves as a criterion for the degree of sizing reached at that stage.

An apparatus that may be used for determining the sintering and the melting points of aluminum resinate is described (with sketch). These vary with the type of rosin used in the size and, also, with the amount of Al_2O_3 in aluminum resinate. Apparently, a "pure" aluminum resinate (containing only 0.5 per cent free rosin) sinters at 150° and melts at 162°C. Curves indicate that both sintering and melting increase with increasing amounts of Al_2O_3 and similar curves applied to a specific paper and paper machine may be used in estimating the composition of a size.

The following are also discussed briefly: the effects of the type of water used in the manufacturing operation; the relationship between pH and the volume of the flocculated size; the influence of temperature on sizing, *et al.* Ten photomicrographs are included. Josef Kaltenbach, *Das Papier*, 8, 409-18 (1954) (in German).

Preservation of groundwood pulp against fungi

Mill scale trial runs demonstrate clearly the advantages of a combined treatment of mechanical pulps with a phenyl mercury compound and pentachlorophenol over that in which only the phenyl mercury compound is used. Using pentachlorophenol alone does not give the same protection. Pentachlorophenol apparently reacts with phenyl mercury forming a complex which prevents the loss of mercury on pulp storage, but actually a large excess of pentachlorophenol must be used. Despite the fact that phenyl mercury prevents the growth of pulp rotting fungi, it does not adequately control color-producing organisms. Fungal attack on completely untreated controls varys a great deal. For example, frozen pulps are less often attacked by rots than are unfrozen bales, but frozen pulps are often attacked markedly by blueing fungi and molds. The mercury-resistant fungi are usually controlled when pentachlorophenol and phenyl mercury are used together in the ratio of 40 to 1. This treatment lends marked resistance to the groundwood, even on long storage.

The cost of the combined treatment is three to four times that of the phenyl mercury compound alone. Six figures, two tables and five references are given. Stig O. Pehrson and Tage Petterson, *Svensk Papperstidn.*, 57, No. 212, 801-7 (1954) (in English).

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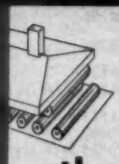

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PATENT REVIEWS

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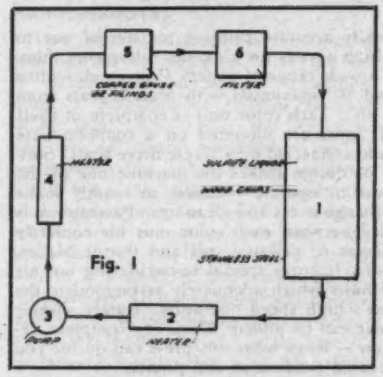

Production of wood pulp by the sulfite process

U.S. 2,683,090, issued July 6, 1954, to Fred C. Aldred and Geoffrey B. Turner, and assigned to Courtaulds Ltd., describes a process for inhibiting the formation of sulfate during sulfite cooking. The basic feature of the process is maintaining the cooking liquor in contact with copper.

The process may be carried out in a circulating system as shown in Fig. 1. The wood chips are packed in a vessel 1, preferably made of stainless steel, and the sulfite liquor is continuously circulated through the vessel 1, through an external heater 2, a pump 3, a second heater 4, a container 5 containing copper, a filter 6 to remove copper sulfide, and back into vessel 1.

The decomposition of the sulfite liquor apparently follows the reaction: $3\ SO_2 \rightarrow 2\ SO_3 + S$.

This reaction is catalyzed by metals used in the construction of the cooking vessels and by substances present in the wood. By maintaining the sulfite liquor in contact with 0.05-1.0 per cent of copper, based on the weight of wood chips, the sulfate formation is effectively reduced. The copper is converted to copper sulfide which may be recovered from the filter 6.

Method of making hardboard

U. S. 2,680,995, issued June 15, 1954, to Orcutt W. Frost and Gordon E. Tower and assigned to Stimson Lumber Co., relates to the wet process of forming hardboard. Improved flexural strength, water resistance, and other properties are claimed to result by providing a treatment of the fibers in the slurry stage with a thermosetting resin and then, after the fibers have been formed into the wet lap and while the pre-form mass is still wet, applying a surface treatment to the wet lap which consists of impregnating the wet lap with a thermosetting resin. The wet lap is then transferred to the hot press and after pressing is removed from the hot press in a finished state of manufacture.

The thermosetting resin applied in the slurry stage is water soluble at a pH of 7 but water insoluble at a pH below 7.0. Certain kinds of phenolformaldehyde resin are recommended. A water dispersible emulsion of a wax is also added to the fiber slurry to provide sizing for the fibers and water repellency to the finished board. Some sodium hydroxide may also have to be added to the mixing chest in order to maintain a pH between about 7.3 and 7.7 for about an hour, so that some of the resin will remain in solution.

The pulp-resin-size mixture is then pumped to the machine chest, where dilute sulfuric acid and alum are added to reduce the pH to 4.7-5.0. This precipitates the resin out of solution and deposits it on and within the fibers. The purpose of the alum is to break the wax emulsion to cause the parafin to coagulate on the fibers. The pH at this point is quite critical.

The treated fiber slurry may be formed into a wet lap on any type of board-forming equipment such as a vacuum cylinder or a fourdrinier machine. The fiber is run on the forming machine the same way as for the manufacture of conventional boards. The wet lap must be dewatered sufficiently to give it strength to support its weight without breaking when passed over supporting rollers and between a pair of treating rolls in the next main processing step in which the "surface" treatment is applied.

The surface treating mix is made up of five components as follows:

1. Carrier component for other materials —water.
2. Reinforcing or binder component—a thermosetting resin-phenol formaldehyde resin.
3. Sizing component—wax emulsion—Hercules Paracol 600 N.
4. Viscosity control component—sodium alginate.
5. Parting or release component—aluminum distearate with water-miscible solvent-isopropl alcohol.

The surface treating composition is prepared so as to contain around 6 to 15 per cent of total solids, with the remainder consisting substantially of water.

The treating mix is a free-flowing liquid and free from agglomerated or coagulated particles. The paraffin emulsion and aluminum stearate solids in the treating mix are not in solution but are in a finely divided solid state in suspension or emulsion. The resin solids may be either in finely divided emulsion form or may be present partly as finely divided solids in emulsion and partly in solution which will be subsequently precipitated in situ in the wet lap upon further dilution with the water and acid contained in the wet lap. The finely di-

*Patent attorney, 17600 Pinehurst, Detroit 21.

Other Patents of Interest to the Pulp and Paper Industry

Subject	Inventor or Assignee	Patent No.	Date 6/8/54
Continuous digester chip level indicator	West Virginia Pulp & Paper Co.	2,680,298	
Carrier for cylindrical objects	Dura Corp.	2,680,556	"
Frozen confection sandwich container	Wilson H. Madden	2,680,557	"
Opening device for cartons	Gaylord Container Corp.	2,680,558	"
Paper of improved wet strength	Allied Chemical & Dye Corp.	2,680,682	"
Charging and discharging mechanism for use in the manufacture of pulp	West Virginia Pulp & Paper Co.	2,680,683-4	"
Paper treating resin	Allied Chemical & Dye Corp.	2,680,734	"
Roll wrapping apparatus	Powell River Co. Ltd.	2,681,534	6/22/54
Impeller for deflaking papermaking stock	The Black-Clawson Co.	2,681,598	"
Molding pulp and impregnating the product	American Cyanamid Co.	2,681,599	"
Paper embossing machinery	The Black-Clawson Co.	2,681,611	"
Paper coating machine	The Black-Clawson Co.	2,681,636	"
Coating apparatus for applying a resin in particulate form	Masonite Corp.	2,681,637	"
Wire stringing device for paper machinery	The Black-Clawson Co.	2,681,721	"
Article positioning and cushioning device for use in shipping containers	The Hinde & Dauch Paper Co.	2,681,733	"
Method of preparing alkali cellulose	American Enka Corp.	2,681,908	"
Method of preparing a cellulosic board	Curtis Companies Inc.	2,682,083	6/29/54
Screen plate for papermaking machines	Bertram J. Vincent	2,682,205	"
Machine for screening paper stock	The Cowles Co.	2,682,811	7/6/54
Pulp screen	Matheson Machine Works Inc.	2,682,812	"
Paper machine suction box cover	Gilbert J. Seefeld	2,682,813	"
Container for frozen products	National Dairy Research Laboratories Inc.	2,682,987	"

vided solids thus become filterable by the fibers of the wet lap, so that the solids are retained in the wet lap while the water is being expressed upon subsequent pressing of the wet lap after the surface treatment.

When the components are mixed, the pH is about 8. From a sizing standpoint it is desirable to adjust it to 6.5-7.0 with dilute sulfuric acid.

The wet lap after leaving the press rolls is passed over supporting rollers and between a pair of treating or distributing rolls. The treating rolls are driven at wet lap speed and are in firm contact with both sides of the wet lap. Tensioning adjustments are provided to vary the pressure of the roll against the wet lap. The treating mixture is applied by flowing it onto the sheet ahead of the top distributing roll. The fluid overflows the edge of the sheet into a bottom pan and is picked up from the pan by the lower distributing roll in surface contact with the bottom of the sheet, which thereby applies the fluid to the lower side of the sheet. This arrangement is such that a major portion of the treating mix is applied to the smooth top surface. An overflow pipe returns excess fluid from the bottom pan to the supply tank, while maintaining the fluid in the bottom pan at a constant level.

The distributing rolls, particularly the upper roll, pick up from the surfaces of the wet lap a considerable amount of loose fibers in the manner of lint which tend to become added to the treating mix and will in time render the mix unusable. It has therefore been found advantageous, as a means of preventing the addition of such fibers to the treating mix, to provide a wiping bar on the back side of the treating roll which holds and accumulates the loose fibers so picked up. The accumulation is then occasionally removed.

The amount of solids desired to be added to the board by the surface treatment and the depth of treatment depend upon the characteristics desired in the final product, and also upon the thickness and characteristics of the board in its wet lap pre-form. It is preferred to provide solids at the rate of 15 to 20 lbs. per 1000 sq. ft. of board to be divided between the two surfaces as desired. The amount of solids added by the treating mix is controlled by the rate of application of the liquid mix to the wet lap and the percentage of solids in the treating mixture.

The wet lap is now ready for the hot press. The press temperature and the time in the press affect the cure of the board and consequently the properties of the board. The hydraulic pressures applied during pressing largely determine the density of the finished product, assuming that a cured board is produced with any given pressure cycle. Since strength increases as the density increases, the objective in pressing treated board has been to use press cycles resulting in the highest feasible density. A density of 0.9 to 1.1 is a preferred objective. A preferred temperature is that provided by saturated steam pressure in the range from 120 to 170 psi gauge, which is 350° to 375° F.

A preferred total time of hot pressing for ⅛-in. board is 11 to 12 minutes; for 3/16-in. board from 13 to 14 minutes, for ¼-in. board from 15 to 17 minutes.

The completed, compressed product is a mixture of fiber and resin which has become coalesced and consolidated into an inseparable, infusible product. The resin provides a reinforcing binder and is rendered insoluble in water and organic solvents by the heat setting cure to which it is subjected in the hot press operation. The treating solids have been so blended and graded into the fiber sheet that no definite line of demarcation is apparent. There is no coating or surface layer to chip or flake off and impair working properties of the board.

Stabilization of cellulose products against humidity changes

Materials consisting of cellulose fibers, such as wood, paper, paperboards and pulp products, change in dimension when subjected to varying humidity. A means of preventing this is presented by Walter P. Ericks in U.S. 2,692,183, issued Oct. 19,

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1954, and assigned to the Upson Co. (Lockport, N. Y.). It consists of impregnation of solutions containing organic acids such as lactic acid, salicylic acid, gallic acid.

The patent specification gives 15 examples of the method, each using a different acid.

Alkaline pulping to produce pulp and vanillin

Simultaneous pulping action and alkaline oxidation of lignin to valuable end products such as vanillin is practiced by Harry B. Marshall and Charles A. Sankey. The patent, U.S. 2,686,120, is assigned to the Ontario Paper Co. Ltd.

The digestion is carried out in the range 150-200°C., at 50-300 psig pressure, for a period of about 4 hours. The partial pressure of oxygen in the digester is that derived from air under the digestion conditions. Vanillin is produced as an alkali salt in the liquor residual, from which it may be recovered by known means. Yields of 15 per cent of vanillin (based on the original lignin content) are reported. In some cases other substances are also recovered, including acetovanillone, syringaldehyde, acetosyringone, and parahydroxy benzaldehyde.

The method has been applied to spruce chips, poplar chips, wheat straw, bagasse, flax straw, oat hulls, and soya bean stalks.

Examples of the process and of apparatus which may be used in carrying it out are given in the patent specification.

Treatment of sulfite waste liquor

In U. S. 2,689,817, issued Sept. 21, 1954, to Fred Fortress and Blanche B. White, and assigned to Celanese Corp. of America (New York City), sulfur dioxide is first removed from sulfite waste liquor, and the sulfur dioxide-free liquor is passed continuously through a series of vessels containing bacteria of the genus Propioni-bacterium. Practically all of the sugars present in the waste liquor are thus converted at high yields to propionic acid, together with smaller quantities of acetic acid and/or butyric acid.

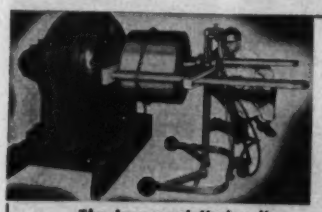
Manufacture of vanillin from lignin

U.S. 2,692,291, issued Oct. 19, 1954, to Collis C. Bryan, and assigned to Monsanto Chemical Co., describes a process for manufacturing vanillin from lignin, which gives improved yields through control of the rate of supply and partial pressure of oxygen in the autoclave. It is claimed that the optimum partial pressure of oxygen decreases rapidly to low and critical levels as the reaction proceeds. An oxygen partial pressure as high 20 psi is permissible when the temperature is 100°C. or below in the heating-up period (before much breakdown of the lignin has occurred). The "critical" partial pressure for high yield continually decreases to about 2.5 psi by the time 140°C. is reached, in order to prevent over-oxidation of the molecular fragments. Reduced partial pressures of oxygen may be obtained by mixing steam or nitrogen with air.

Process of finishing coated paper

U. S. 2,691,606, issued Oct. 12, 1954, to Thomas L. Ziliox and William P. Taylor, assigned to the Champion Paper & Fibre Co., provides a method of finishing paper carrying a starch coating, by water plasticizing the coating with an oil-water emulsion containing a cationic nitrogenous surface active agent. It is claimed that this avoids scaling, rubbing off, or sticking of the coating.

The patent lists a number of cationic nitrogenous surface agents which may be used and which are commercially available. They are principally amines or quaternary-ammonium compounds, containing one or more alkyl groups of 10 to 23 carbon atoms. An example given is dialkyl dimethyl ammonium chloride. The oil used may be a mineral or vegetable oil, or such a compound as dioctyl phthalate. The emulsion should contain 1 to 5 per cent total cationic agent and oil.



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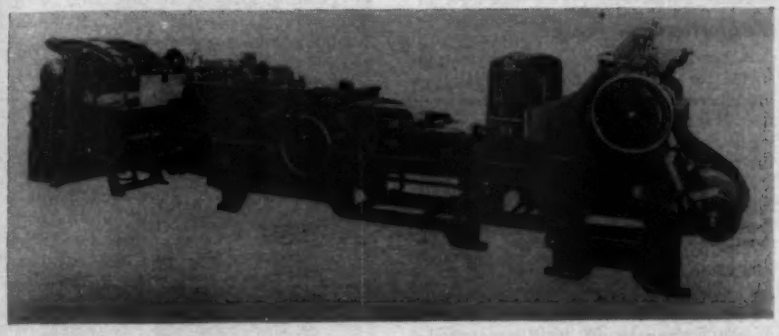


Bag-making machine

The new Model 84RKW bag-making machine produces S.O.S. style carry-out bags complete in one operation, at high speeds. It is reported that the demand for the new style square-bottom, automatic-type, carry-out bag is raapidly increasing.

When snapped quickly, in the proper manner, the S.O.S. bag fills with air and automatically opens. Because of its gussetted construction, the mouth of the bag tends to stay open, making the filling operation quicker and easier. The gussetted construction of the new S.O.S. style bag also enables the packer to fit the food packages more precisely, since the shape of this bag is somewhat similar to that of a rectangular box. *Potdevin Machine Co., 285 North St., Teterboro, N. J.*

Rubber-plastic valve bodies

Sensitive chemical solutions and acids quickly destructive to ordinary pipe may now be handled in completely corrosion-resistant and non-contaminating piping systems of greater capacity than ever before, according to the manufacturer. This is made possible by a tough, lightweight, rubber-plastic valve body whose 3 in. diameter provides the process industries with a new weapon in the solution of their piping problems. The valve body is made of a styrene copolymer called "Uscolite".

A complete line of 3 and 4 in. pipe fittings made of the same material has also been announced. Heretofore the largest valve and fittings available were of 2 in. diameter. Pipe sizes range to diameters of 6 in.

The valve and pipe fittings are of one-piece, homogeneously-molded construction, having no welds or joints at points of stress. They are made to withstand the same working pressures and temperatures as the corresponding size extra-heavy "Uscolite" pipe. Working pressures range to 150 psi and temperatures to 170° F. *United States Rubber Co., Rockefeller Center, New York 20, N. Y.*

Controllers and proportional control units

Two new instrument lines, termed "Speedomax Type H" controllers and "Series 60" proportional-control units, have been announced. Both are mounted in the "Speedomax" case when the equipment is to be used for proportional control. The control unit is also made as a separate instrument for use with the company's "Speedomax Type G" and "Micromax" controllers.

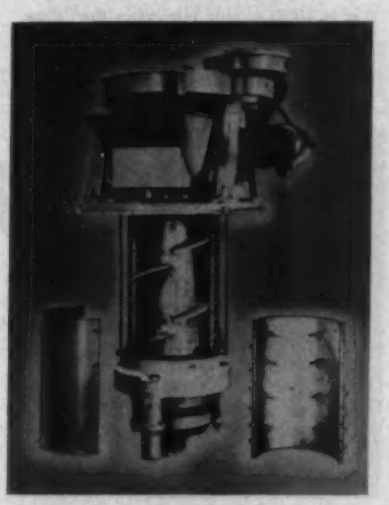
The Type H instruments are described as compact new controllers, recorders or indicators and companions to the larger, more versatile Type G. They are somewhat less than half the size of the Type G.

Type H is made in single-point only and at present only for temperatures, with thermocouple or "Thermohm" resistance thermometer as the sensing element. The instruments are said to have relatively long measuring scales and to employ the full length in setting the control point, which facilitates close control, it is claimed.

Structurally, the instrument is entirely new. Convenience features stressed by the manufacturer include the chart feed, pen, and control-setters, and the location of terminals for thermocouples, etc., in a recess on the outside back of the instrument, for convenient installation and the protection of the instrument tubes, wiring and mechanism.

The Series 60 control unit functions "between" the controller proper and the fuel valve or contactor in a proportional control system. Its job is to translate "Speedomax" measurements into the correct regulating operations. It is made in three types: position-adjusting or duration-adjusting, with what instrument men call proportional, reset and rate actions; and simple proportional control.

Series 60, which replaces the Series 50, measures 11 x 6½ x 11 in., or about half the panel space of the earlier unit. It is said to feature greater simplicity, interchangeability of the three types of units, plug-in construction, and advances in sensitivity, speed and flexibility. *Leeds & Northrup Co., 4901 Stenton Ave., Philadelphia 44, Pa.*



Dewatering press

While capacity varies widely with the nature of the product, in terms of sugar beet pulp this dewatering press will process approximately 400 tons per hr. with low moisture. Over-all height of the press is 14 ft. 7 in., with drive, feed hopper and upper spindle assembly carried on a rigid pedestal and floor base. It requires a floor space of 7 ft. x 6 ft.

The feed hopper, split for easy removal, is available open as shown, or totally enclosed with large screen surface for high moisture products, or with screw conveyor feed for low moisture products. Outside housing and outside screen both are made in halves to permit easy access to screen and to spindle, respectively.

The spindle is in two parts, flanged and bolted together at the floor line. This construction permits spindle repairs without dismantling the drive. The top part

of the spindle is keyed to the spur gear in the speed reducer, with ball bearings top and bottom to take the thrust from the spindle. The spindle does not revolve on the adjusting cone but on a removable shaft extension positioned in a bearing which is part of the press bottom.

All castings are made of high tensile strength "Meehanite." For presses handling corrosive products, all parts in contact with the product can be furnished of stainless steel.

The drive consists of a spur-bevel gear reducer, torque-arm reducer, and V-belt to a standard 15 hp, 1200 rpm motor. Other drives suitable for motors up to 25 hp are available. An alternate drive consists of the gear reducer, with roller chain drive in an oil-tight chain casing and a gear motor reducer. A vari-drive V-belt can be furnished when required. *Stearns-Roger Mfg. Co., 660 Bannock St., Denver 4, Colo.*

Alkali-soluble resin adhesive

A new general-purpose resin adhesive that is alkali-soluble eliminates the "gunk" formed in deinking waste paper products contaminated with an alkali-insoluble resin adhesive, according to the manufacturer. Designated as "Resyn 60R-3132," this resin adhesive can be used in the manufacture of paper products of all kinds.

The adhesive, based on an alkali-soluble polyvinyl acetate copolymer emulsion, is a cold-setting liquid glue that dries rapidly. It is said to be unaffected by humidity and moisture and to form flexible bonds of great strength.

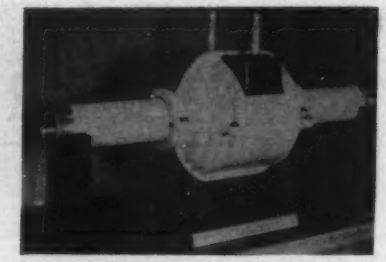
It is claimed that paper mills which have integrated facilities for making paper products will find that by using this resin they can secure the advantages of a resin adhesive with no feat of insoluble "gunk" when they recirculate production waste in their pulping operations. *National Starch Products Inc., 270 Madison Ave., New York 16, N. Y.*

Thermodynamic steam trap

In the recently developed thermodynamic steam trap, the kinetic energy of steam closes the valve. The manufacturer's claim of trouble-free operation is based on the fact that the new operating principle permits an extremely simple design, free of the usual valve mechanisms, devices, fragile parts and narrow channels.

The only moving part is the valve head, a solid heat-treated stainless steel disc, resulting in practically no maintenance, according to the manufacturer. The same head and seat are used for pressures to 600 psi and temperatures to 950° F.

It is claimed that the design and metals used enable this new steam trap to withstand superheat, water-hammer, vibration and corrosive condensate. *Sarco Co., Inc., Dept. P, Empire State Bldg., New York 1, N. Y.*

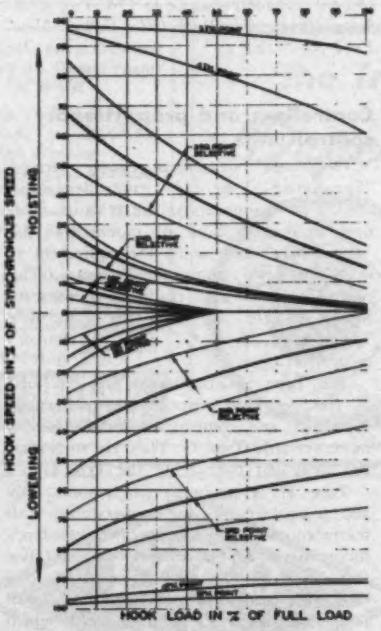


Magnetic flow meter

A new electromagnetic flow meter, designed for 2 to 8 in. flow lines, has been introduced to the market. Incorporating all the advantages of electromagnetic metering, the instrument is additionally rated for unlimited maximum flows, making practical a number of flow measurement applications impossible with ordinary metering equipment.

This meter will measure the volume flow rate of any liquid of sufficient conductance and velocity. Unaffected by the pressure, viscosity, density or changes in conductivity of the flowing liquid, it is recommended for aqueous solutions, slurries, acids and other corrosives.

It is claimed that the over-all accuracy is within ± 1 per cent of the scale span from maximum flow down to zero flow, despite such factors as turbulence, dirty flow, etc. The meter produces no more pressure drop than length of pipe equivalent to the meter tube, according to the manufacturer. *Foxboro Co., Foxboro, Mass.*



Control for overhead cranes

The new Selectodyne control gives the crane operator greatly increased precision and smoothness in handling of light or capacity loads, according to the manufacturer. Instead of the standard five speeds, the operator has eleven in each direction, and he can select instantly any one of eleven.

An important and exclusive feature of the Selectodyne control is its availability with an automatic load brake for extra safety, even with loads over rated capacity. The accompanying chart shows how close speed regulation on the first and second (of eleven) speed points in each direction is made possible by the load brake sustaining loads to permit reduced torque. The operator selects the exact hoist speed desired, controlling lowering speeds for light or capacity loads with ease and safety. This brake is effective regardless of any conditions which may exist in the electrical system, according to the manufacturer.

With the Selectodyne, the crane operator uses only one control lever for all hook motion.

Basic parts of this control are the dual master switch, a magnetic hoist controller and an eddy current brake. Selectodyne is available on all capacities of Whiting overhead cranes. Whiting cranes now using conventional controls may be easily converted to Selectodyne. *Whiting Corp., Harvey, Ill.*

Wiring for adjustable-speed drive control units

"Channel wiring" is a new design feature of the control units of all-electric adjustable-speed V-S drives. This innovation involves two new approaches to basic principles: (1) leading the wires across the surface of the control panels through protective "channels," and (2) coding the wires, by number and color, and no longer showing the actual wires on the diagrams.

According to the manufacturer, the result is added protection for the panel wiring, simplification of wiring diagrams, and easier alteration for possible future changes of drive functions. Also, maintenance time is said to be reduced by the simplified wiring arrangement. Under the new system the wires are carried in duct-like channels which have perforated sides for the exit of each wire to its proper destination. *Reliance Electric & Engineering Co., 1088 Ivanhoe Rd., Cleveland 10, Ohio.*

Plasticizer for papers

A new plasticizer for papers, which is said to have excellent moisture stabilizing properties even at high humidity, is now on the market. This product, tentatively called "Plasticol," was developed by the National Sugar Refining Co., and Pioneer has been designated as the sole licensee.

The product will eliminate the need for glycerine, inverted sugars and glycols as a plasticizer, according to the manufacturers, who also state that it is expected to find excellent use in the making of glassine, paper coatings and finishes.

"Plasticol" is a synthetic sugar resin in liquid form, light yellow in color, and completely soluble in water. Tests are said to show that "Plasticol" makes possible a non-tacky surface, under widely varying humidity conditions. It is claimed that this plasticizer has the following advantages: does not migrate; prevents kraft

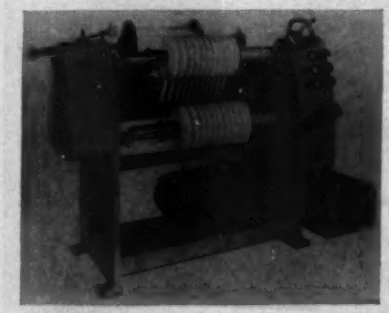
embrittlement; has color stability; has excellent stability in acid and alkaline mediums; improves tensile strength, and is nontoxic.

Requests for samples of "Plasticol" should be accompanied by a statement of the particular problem and conditions. *Pioneer Chemical Works, Inc., Dept.-S,* 940 *N. Delaware Ave., Philadelphia* 23, *Pa.*

Distilled water heater

A new product, of interest to laboratories, keeps hot distilled water on tap for instant use. The water is maintained automatically at any predetermined temperature by means of an adjustable thermostat.

The tank, which has a 1½ gal. capacity, is constructed of tinned copper and has a removable cover. The exterior finish is satin nickel plate. A pilot light shows when the current is on. The 650 w heating unit is available for 110 or 220 v. The dial-type thermometer ranges from 30 to 240° F. Cord and switch are included. *Barnstead Still & Sterilizer Co.,* 224 *Lanesville Terrace, Forest Hills, Boston* 31, *Mass.*



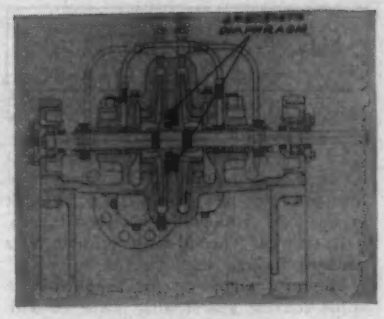
Film slitter

The Model 635 film slitter is basically a two-spindle, center drive, differential rewind slitter. It is used principally for narrow width slitting where positive roll separation and uniform roll density is required. Products which are being slit on this machine include: mylar, acetate, cellophane, teflon, vinyl, impregnated glass cloth, recording tape, glassine and aluminum foil laminates.

Major design emphasis is devoted to the differential principle of rewinding wherein the rewind cores are spaced on the mandrel with steel spacer rings keyed to the rewind mandrel. The rewind mandrels are positively driven at a higher speed than the normal winding speed of the cores. The cores, therefore, slip on the mandrel. In order to produce the necessary winding torque, the stack of cores and spacers is squeezed endwise from one end of the rewind mandrel. This endwise force, formerly done by spring collars, is now done by regulated air pressure with a minimum of operator skill. The differential winding principle tends to distribute the total web pull equally on each roll being rewound, according to the manufacturer.

The slitting section of this model is designed to permit the interchange of the following slitting mechanisms: shear cut, razor blade cutting in grooved roll, razor blade slitting in air, and score cut. Other design features include an air regulated unwind brake, web guide attachments, trim blowers, footage counters and step drive for 1 and 3 in. diameter rewind mandrels.

These machines are available in widths from 12 to 52 in. and in three frame sizes to suit rewind diameters from 8 to 24 in. The welded frame construction permits minor design changes and installation of special attachments. Web speeds up to 500 fpm can be attained, according to the manufacturer. *John Dusenbery Co., Inc.,* 271 *Grove Ave., Verona, N. J.*



Two-stage pumps

A new series of two-stage pumps for handling clear liquids has been announced. These pumps, designated as the Fig. 3305 line, are available in five sizes, providing heads up to 1,000 ft. and capacities up to 1,000 gpm.

Opposed impellers provide hydraulic balance, and thrust balance is achieved by the use of a new labyrinth diaphragm.

The pump was designed with special attention to operating efficiency and ease of maintenance. The casing is horizontally split, and the interior can be inspected and the rotating parts removed and replaced without disturbing piping connections.

Bearing spans have been kept short, which, according to the manufacturer, results in a space saving of as much as 50 per cent in comparison with other pumps

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of equivalent head and capacity. Wide interchangeability of parts has been provided so that spare parts inventories can be kept at a minimum. The direction of rotation of the new pumps can be changed in the field without any additional parts, it is claimed. This is made possible by a patented locking shaft sleeve.

The new pump can be supplied with either conventional stuffing boxes, or with mechanical seals. *Goulds Pumps, Inc., Dept. PI, Seneca Falls, N. Y.*

Displacement pump with carbon impeller

The low-cost Eco gearless, multi-purpose, rotary-type displacement pump is now available with a self-lubricating carbon-graphite impeller.

The following advantages of the carbon-graphite impeller are reported: self-lubricating-dry runs caused by fluid cutoff will not harm the pump; chemically inert in water, oils, solvents and a long list of non-lubricating fluids and corrosive chemicals; high resistance to thermal shock (temperature ranges from —70° to 400° F.); precision machined; custom manufactured in off-standard sizes; speeds up to 5000 rpm with dry, non-lubricating fluids; little tendency to wear, seize, expand or contract at high speeds, and provides protection to the pump housing, extending its service life. *Eco Engineering Co., 12 New York Ave., Newark 1, N. J.*

Polyvinyl acetate emulsion

A new polyvinyl acetate emulsion, 1572-R, is said to be one of the most versatile of all resin emulsions. It is colorless, odorless, nontoxic, and, according to the manufacturer, is one of the least expensive synthetic resin emulsions. *Nopco Chemical Co., Depts. MD, Harrison, N. J.*

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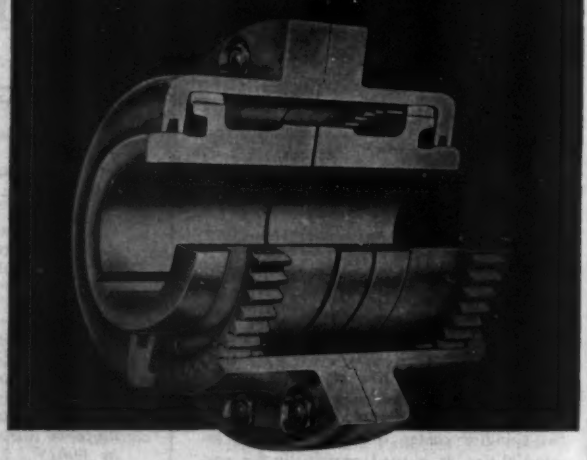
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NEW LITERATURE

Books

WET STRENGTH IN PAPER AND PAPERBOARD. (Monograph No. 13). Published by the Technical Association of the Pulp and Paper Industry, 155 East 44th St., New York, N. Y. 6 x 9. 96 pages. Paper-bound.

A product of the effort of the TAPPI Wet Strength Committee, this book describes in detail raw materials, operating procedures for the manufacture of wet-strength papers, the chemistry of wet strength, process control, testing methods, and markets and uses.

ENGINEERING ANALYSIS. By D. W. Ver Planck and B. R. Teare, Jr. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. 6 x 9¼. 344 pages. $6.00.

This book is an exposition of professional method as it applies to the analysis of engineering problems. The subject is developed by example with special stress on the whole thinking process.

The authors show what must be done to translate engineering situations into mathematical language, and what is necessary after a mathematical result has been obtained. More specifically, the book deals with such matters as: defining the problem to be solved; deciding what principle to apply; choosing coordinate systems; checking thoroughly; choosing dimensionless variables, and the sketching of curves.

The book treats a number of subjects needed by engineers from the point of view of use and true understanding. The topics include material from dynamics of translation and rotation, electric circuits, heat transfer, solution of linear differential equations with constant coefficients, uses of power series, integration by graphical and numerical methods, hyperbolic functions, and the evaluation of indeterminate forms.

To stimulate thinking, the book features an extensive collection of problems with no clue given as to the methods for solution.

QUALITY CONTROL. Second edition. By Norbert L. Enrick. Published by The Industrial Press, 148 Lafayette St., New York 13, N. Y. 6 x 9. 181 pages. $4.00.

In this enlarged second edition, some sixty pages of new text, tables, and charts have been added to provide a more complete and useful discussion of quality control in its various aspects. Among the new subjects considered are the co-efficient of variation, a yardstick of variability which is often useful, especially in the processing industries; how to test a distribution for normality; how and when to use control charts computed from center lines; the application of multiple control charts to control several individual components of a product at one time; the use of acceptance control charts for accepting or rejecting a product received from an outside supplier; the interpretation of frequency distribution curves; where to use control charts for per cent defective product, and the analysis of variations between machines and departments as an aid in locating sources of product difficulty.

As in the first edition, a simple direct approach to each subject is used, and both highly technical language and complicated mathematical formulas are avoided. The emphasis is placed on the practical application of quality control and an understanding of the basic methods.

All the essential techniques of modern quality control are covered, such as sampling plans, control charts, analysis of variations, statistical determination of tolerances, as well as administrative procedures and controls.

RESEARCH IN FORESTRY AND FOREST PRODUCTS. Published by the Food and Agriculture Organization of the United Nations, Rome, Italy. Distributed by Columbia University Press, 2960 Broadway, New York 27, N. Y. 6 x 9. 323 pages. $3.00. Paper-bound.

This book, prepared by the Forestry Division of FAO, with the assistance of the International Union of Forest Research Organizations, is a directory of forestry and forest research institutions, listing the objectives of research, arranged according to the Oxford classification, and briefly describing the current research projects.

GUIDE FOR SAFETY IN THE CHEMICAL LABORATORY. Prepared by the General Safety Committee of the Manufacturing Chemists' Association, Inc. Published by D. Van Nostrand Co., Inc. 250 Fourth Ave., New York, N. Y. 5¾ x 8½. 234 pages. $4.25.

This new manual attempts to set forth a basis for guiding laboratory personnel in good safety practices in the handling of hazardous chemicals; general rules for the design and construction of a safe and efficient laboratory; equipment and service facilities that are necessary in properly designed laboratories; precautionary methods and personal protective equipment; a description of hazards presented by certain physical and chemical properties of materials which possess fire, explosion, and health hazards, including precautions and safeguards; first aid and suggested medical treatment of injuries resulting from exposure to chemicals, and references to sources of safety information.

Up to date in every way, the book covers the newest protective measures for the safe handling and use of radioactive materials.

WHO'S WHO IN ELECTRONIC DISTRIBUTION. Published by Who's Who in Electronic Distribution, 846 Leader Bldg., Cleveland 14, Ohio. 8¼ x 11¼. 376 pages. $7.50.

A primary supply-source guide to electronic parts and equipment, this directory contains alphabetical listings of manufacturers' representatives and parts distributors. A special feature of the 1954 edition is a listing of electronic parts distributors catering to industry-type accounts. Distributors in this section of the book are listed by localities under the names of the manufacturers whose products they stock and sell.

Another feature to aid procurement is a listing of suppliers by products. Also, an alphabetical listing of more than 1,000 product trade names, with the companies using them identified, is found in this volume. Geographic lists of more than 600 representatives and 1,300 parts distributors complete the volume. Each listing contains all data essential to procurement work.

Booklets and Pamphlets

WHY THE SMALL FORK TRUCK? By Nathaniel Warshaw. Published by Market Forge Co., Materials Handling Div., Everett 49, Mass. 8½ x 11. 28 pages. This booklet, combining an academic approach with clear layman's language, shows how small and medium size plants can compete with big business in materials handling efficiency. This study analyzes the space, time and labor factors involved in small plant operation and suggests fundamental solutions derived from the author's experience in the design and manufacture of materials handling equipment and based on actual results of their application in plants throughout the world.

BETTER LABORATORY PLANNING. Published by the Laboratory Equipment Section, Scientific Apparatus Makers Association, 20 N. Wacker Drive, Chicago 6, Ill. 8½ x 11. 24 pages. This revised edition is based upon many helpful comments from users of the original publication and carries a more comprehensive approach to the better planning of laboratories. It includes many new photographs of industrial, and

An industrial accident investigation technique

(continued from page 1097)

bility of injury, such investigations are conducted by the shift foreman.

These incidents are reviewed in the department by the departmental supervision, and distribution as seems appropriate is made.

Regular review

Accident investigation reports are reviewed at 60- or 90-day intervals to audit compliance with the recommendations made and to follow up on changes which were to have been accomplished. This is an excellent practice and highly recommended.

We note from the literature on this subject that relatively few companies make a practice of investigating so-called "doctor care" cases involving injury but no lost-time. Further that there is very little reference to the investigation of "near accidents" in which no injury occurred. While enthusiasm for safety could carry us to extreme beyond the point of diminishing returns, we feel that investigation of doctor care cases and the more significant near-accident situations is worthwhile and profitable. Such investigations are excellent as a promotional tool to be used in safety and job training by the supervisor in the department. An additional advantage is the emphasis which such activity places upon the importance of safe practice, method and procedure. We feel we should learn from every situation.

Enthusiasm for investigations should not allow overdoing this activity. If too much time is spent, accident investigations will lose their significance and not be regarded as importantly as they should be. When too much time is spent, supervisors and committee members may consider it a bother and resent the time demand made upon them. Another disadvantage is the natural resistance of the individual to interference with his privacy. While we have experienced little trouble in getting the cooperation of individuals in lost-time cases or serious doctor care cases we can appreciate that an individual does not like the adverse publicity which accompanies minor cases and the publication of the so-called close call which he might have had. The advantage, however, outweighs the disadvantage.

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New Literature . . .

research and development laboratories, as well as other types of laboratories. One section of the booklet is devoted to recommended bidding practices, answering many questions on the subject of bidding.

HOW TO START A SAFETY PROGRAM. Published by the National Safety Council, 425 North Michigan Ave., Chicago 11, Ill. 4½ x 7. 48 pages. This booklet is designed to aid industry in solving their accident and fire problems, using the management approach. It presents a clear, short, simple statement of what to do first to get control of fire, health and personal injury hazards, and goes on to discuss the many aspects of a safety program.

THINNING PROBLEMS AND PRACTICES IN DENMARK (Technical Publication No. 76). Published by State University of New York College of Forestry, Syracuse, N. Y. 5 ¾ x 9. 92 pages. 80 cents. The first in a series of publications dealing with timely forestry subjects of world-wide significance, this booklet on thinning as practiced in Danish forests presents contributions by several authors. The articles deal with both the basic biological background and the practical art of thinning. Special emphasis has been placed upon current thinning problems that are under serious consideration by foresters.

Manufacturers' Publications

Through the co-operation of manufacturers and suppliers, THE PAPER INDUSTRY lists the following Catalogues, bulletins and booklets. They may be obtained without cost or obligation, unless otherwise specified, by writing direct to the manufacturers. Please address requests on your company letterhead.

Bulk Pneumatic Handling. Fuller Co., Dept. PI, Catasauqua, Pa.—Titled "How to Pull Dollars Out of Thin Air," Bulletin G-2 tells how handling costs can be reduced by using the proper pneumatic handling system. Also covered are the rotary compressor, the clinker cooler, and the new kiln preheater.

Standard Paper Tests & Instruments. W. & L. E. Gurley, Industrial Div., Dept. PI, Troy, N. Y.—Procedures for testing paper stocks and other materials are described in Bulletin 1400, titled "Gurley Testing Instruments." Among the tests outlined are standard procedures for determining stiffness, smoothness, porosity and softness.

Water Testing Equipment. W. H. & L. D. Betz, Dept. PI, Gillingham & Worth Sts., Philadelphia 24, Pa.—This new booklet, titled, "Testing Equipment for Control Water Analyses," describes the complete line of Betz titration stands and test sets for hardness, alkalinity, chloride, sulfite, etc.; cabinets and test sets for similar tests; the "Conducto Bridge" for determination of specific conductance of water solutions; Colorimetric comparators, and a photometer for water analyses.

Controlled Volume Pumps. Milton Roy Co., Station Y, Dept. PI, 1300 E. Mermaid Lane, Philadelphia 18, Pa.—Bulletin 1253 describes and illustrates how controlled volume pumps can be used as flow controllers, ratio controllers and final control elements in process instrumentation.

Electric Equipment. General Electric Co., Dept. PI, Schenectady 5, N. Y.—This new bulletin, "Electric Equipment for Process Industries" (GED-1966A), provides detailed information on electrical equipment for power generation, power distribution and conversion, power utilization, instrumentation, descriptive publications, and G-E service shops and warehouses, applicable to the process industries.

Industrial Ovens. Newcomb-Detroit Co., Dept. PI, 5741 Russell St., Detroit 11, Mich.—Engineering, manufacturing and installation for all processing ovens are described in Bulletin D-55-20. It covers oven types, application to industry, source of heat, selection of heaters, control of heat, and distribution of heat.

Sheet Lining. Metalweld, Inc., Protective Coatings Div., Dept. PI, Scotts Lane & Abbottsford Ave., Philadelphia 29, Pa.—This new bulletin discusses, illustrates and gives considerable data on the application of flexible "Koroseal" sheet to plating tanks, racks, vats, etc.

Separators. Bulkley, Dunton Processes, Inc., Dept. PI, 295 Madison Ave., New York 17, N. Y.—"Colloidair" separators are described in a new bulletin which features factual data on the efficiency of the "Colloidair" process, flow sheets of typical installations, description of operating principles, and an analysis by types of industries of various applications for these systems.

Centrifugal Castings. Sandusky Foundry & Machine Co., Dept. PI, Sandusky, Ohio—Two new bulletins feature Sandusky's recently expanded range of products and current metallurgical specifications for those products.

Conveyor Belt Constructions. Quaker Rubber Corp., Div. of H. K. Porter Co., Inc., Belting Dept. (PI), Tacony & Comly Sts., Philadelphia 24, Pa.—A new color chart showing engineering data for standard conveyor belt construction is now available. It shows graphically six characteristics for eight of the most popular ply and material combinations of conveyor belt constructions.

Lubricated Plug Valves. ACF Industries, Inc., Dept. PI, Valve Div., 1301 E. Ferry Ave., Detroit 11, Mich.—Catalogue No. 5 describes lubricated plug valves. Sections cover description and features, six general types of lubricated plug valves, semi-steel valves, multiport valves, round port opening valves, steam-jacketed base plate valves, V-port and diamond port valves, bronze valves, aluminum valves, accessories, information for ordering and directions for servicing.

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WANTED—One young engineer (a) recent ME or EE graduate of recognized college, or, (b) graduate with three to five years experience in power plant or related work. Will work in power plant doing general power plant work, maintenance and operation with some test and design work as needed. Location, South. Address replies to Box 590, The Paper Industry.

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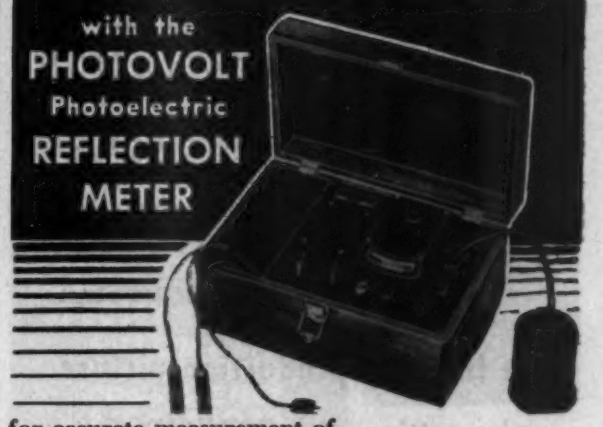

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MARKET QUOTATIONS

RAGS (Domestic)

NEW RAGS

The following are quotations to mills, f.o.b. New York: per cwt.

No. 1 White Shirt Cuttings	14.00 to 14.50
New Unbleached Muslins	16.00 to 16.50
Fancy Shirt Cuttings	7.50 to 8.00
No. 1 Percales	7.00 to 7.50
No. 1 Washables	3.00 to 3.25
No. 1 Light Silesias	7.75 to 8.25
No. 1 Light Prints	6.00 to 6.25
Light Flannelettes	8.00 to 8.50
Cottonades	3.75 to 4.00
Blue Overalls	7.50 to 8.00
Blue Cheviots	7.00 to 7.50
Canton Flannels, Bleached	11.00 to 11.25
Canton Flannels, Unbleached	11.00 to 11.25
Osnaburg Cuttings	9.50 to 10.00
Underwear Cuttings, Bleached	15.00 to 15.50
Underwear Cuttings, Unbleached	15.00 to 15.50
Khaki Cuttings—	
Sun Tan	6.75 to 7.00
Mixed	3.75 to 4.00
Linen Cuttings—	
American	7.25 to 7.75
White	13.00 to 14.00
Grey	13.00 to 14.00

RAGS (Domestic)

OLD RAGS

Quotations to consuming mills, dollars per hundred pounds, f.o.b. New York, follow:

Roofing	per cwt.
No. 1	1.25 to 1.35
No. 2	.95 to 1.00
No. 3 and 4	.70 to .80
Twos and Blues—	
Repacked	2.25 to 2.50
Thirds and Blues—	
Repacked	2.00 to 2.25
Miscellaneous	1.65 to 1.85
Whites, No. 1—	
Repacked	3.75 to 4.00
Miscellaneous	3.25 to 3.50
White, No. 2—	
Repacked	2.75 to 3.00
Miscellaneous	2.25 to 2.50

RAGS (Foreign)

ex dock New York City

NEW RAGS

	per cwt.
New Dark Cuttings	Nominal
New Mixed Cuttings	
New Light Silesias	
Light Flannelettes	
Unbleached Cuttings	
New White Cuttings	
New Light Oxfords	
New Light Prints	

RAGS (Foreign)

ex dock New York City

OLD RAGS

	per cwt.
No. 1 White Linens	Nominal
No. 2 White Linens	
No. 3 White Linens	
No. 4 White Linens	
No. 1 White Cottons	
No. 2 White Cottons	
No. 3 White Cottons	
No. 4 White Cottons	
Extra Light Prints	
Ord. Light Prints	
Med. Light Prints	
Dutch Blue Cottons	
French Blue Cottons	
French Blue Linens	
Checks and Blues	
Linsey Garments	
Dark Cottons	
Old Shoppories	

ROPE and BAGGING

f.o.b. and ex dock New York City

Gunny No. 1—	per cwt.
Foreign	4.25 to 4.50
Domestic	4.25 to 4.50
Wool Tares—	
Light	4.50 to 4.75
Heavy	4.75 to 5.00
No. 1 Scrap Bagging	3.75 to 4.00
Manila Rope—	
No. 1 large	5.25 to 5.50
No. 1 small	4.25 to 4.50
Sisal Rope—	
No. 1 large	4.75 to 5.00
No. 1 small	4.25 to 4.50
New Burlap Cuttings	5.75 to 6.25
Jute Threads—	
Foreign (Nom.)	6.00 to 6.25
Domestic	6.25 to 6.50
Strings—	
No. 1 sisal	4.75 to 5.00
No. 2 sisal	4.25 to 4.50
Soft jute	4.75 to 5.00
Mixed	2.50 to 2.75

WASTE PAPER

The following are quotations, dollars per ton, for No. 1 packing f.o.b. New York:

Shavings—	per ton
Hard White Env. Cuts	120.00 to 130.00
Hard White No. 1	100.00 to 105.00
Soft White, one-cut	75.00 to 80.00
Soft White, No. 1	60.00 to 65.00
Coated Soft	40.00 to 45.00
Fly Leaf No. 1	25.00 to 30.00
Fly Leaf, Woody No. 1	25.00 to 30.00
No. 2 Mixed Col. Woody	20.00 to 25.00
Flat Stock—	
No. 1 Heavy Books and Magazines, Repacked	22.00 to 24.00
Mixed Books	16.00 to 17.00
Ledger Stock—	
No. 1 White	55.00 to 60.00
No. 1 Mixed (Colored)	35.00 to 37.50
Manilas—	
New Env. Cuttings	70.00 to 75.00
New Cuts, One-Cut— Extra Manilas	19.00 to 20.00
Manila Tab Cards, Free of Ground Wood	30.00 to 35.00
Colored Tab Cards	55.00 to 60.00
Kraft—	
New Envelope Cuttings	65.00 to 70.00
Tripled Sorted No. 1 100%	40.00 to 45.00
No. 1 Old Assorted	27.50 to 32.50
News—	
White Blank	65.00 to 70.00
Overissue	24.00—
No. 1 Folded	19.00—
Old Corrugated Containers	22.00—
New Jute Currugated Cuts	27.00—
Mill Wrappers	18.00—
Box Board Chips	11.00—
No. 1 Mixed Paper	10.00—

CHEMICALS

f.o.b. shipping point

Alum (Papermakers)—	
Lump, cwt	5.05—
Ground, cwt	4.30—
Powdered, cwt	5.10—
Blanc Fixe—	
Pulp, bulk, ton	100.00—
Dry, barrels	105.00—
Bleaching Powder—	
Drums, cwt	5.00 to 6.00
Casein (Domestic Standard) 20-30 mesh (bags), lb.	
80-100 mesh (bags), lb.	27.00—
Argentine, lb	22.50 to 23.00
China Clay—	
Domestic Filler	
Bulk (mine) ton	16.50 to 18.00
Domestic Coating	
Bulk (mine) ton	17.00 to 25.00
Imported (ship side)	
Bulk (lump) ton	20.00 to 30.00
Chlorine—	
Tank cars (wks) cwt	2.93—
Gelatine (silicon), lb	1.25 to 1.35
Glyc. (C.P.) drums, lb	.29½ to .30
Litharge, powd. bbl. lb	.16½ to .17

MARKET QUOTATIONS

Rosin (Gum)—	New York, per 100 lbs.
E	9.10—
F	9.10—
G	9.10—
WW	9.35—

Rosin (Wood), carlots, F.O.B. South	5.75—

Salt Cake—

Dom. bulk (wks) ton	24.00 to 26.00
Imp. bulks on dock— (Atl. ports) ton (Nom.)	22.00—

Soda Ash—

Bulk (works) cwt.	1.35—
Paper bags, cwt.	1.70—

Soda (Caustic)—

Solid drums, cwt.	3.85 to 4.50
Ground and flake, drums, cwt.	4.25 to 5.00

Sodium Silicate—

60 deg. 55 gal. drums, (works) cwt.	1.60 to 1.70
40 deg. 35 gal. drums, (works), cwt.	1.35 to 1.40

Starch—

Pearl, 140 lb. bags, cwt.	6.39—
Pearl, barrels, cwt.	6.39—
Paper (Bp.) bags, cwt.	6.39—
Powdered, barrels, cwt.	6.60—

Sulphur (Crude) (Mine) bulk, long ton	26.50 to 28.00

Talc—

Dom. 100 lb. bags (mine) ton	25.00 to 28.00
Canadian	35.00 to 45.00

Titanium Dioxide—

Barium Pig, bbls., lb.	.22½ to .23
Calcium Pig, bbls., lb.	.22½ to .23

Zinc Oxide, bags	13.50 to 15.50

WOOD PULP

Quotations on domestic and Canadian wood pulp, dollars per short air dry ton, delivered consuming mills including basic freight allowances, follow:

Bleached Sulphite	140.00—
Bleached Sulphite, Canadian	140.00—
Unbleached Sulphite	120.00—
Unbleached Sulphite, Canadian	125.00—
Bleached Soda	140.00—
Bleached Soda, Canadian	140.00—
Kraft, Bleached	145.00—
Kraft, Bleach., Southern	142.50 to 150.00
Kraft, Bleach., Canadian	145.00 to 150.00
Kraft, Unbleached, Northern	132.50—
Kraft, Unbleached, Southern	105.00 to 110.00
Kraft, Unbleached, Canadian	110.00 to 115.00
Kraft, Semi-Bleached, Southern	140.00—
Sulphite Screenings	72.50—
Sulphate Screenings	67.50—
Groundwood	82.50 to 87.50

Quotations on imported wood pulp, dollars per short ton, on dock American Atlantic ports with varying freight allowances, follow:

Bleached Sulphite, Swedish	142.50—
Bleached Sulphite, Norwegian, freight allowed	135.00 to 140.00
Bleached Sulphite, Finnish, freight allowed	140.00—
Unbleached Sulphite, Swedish	125.00—
Unbleached Sulphite, Finnish, freight allowed	125.00—
Kraft, Unbleached, Swedish, freight allowed	110.00 to 115.00
Kraft, Unbleached, Finnish, freight allowed	110.00 to 140.00
Kraft, Bleached, Swedish, on dock	142.50 to 147.50
Kraft, Bleached, Norwegian	

PAPER

Quotations are mill quotations New York City

Boards—

Prices per ton, delivered in New York, 10 tons or more:

Plain chip	75.00—
News vat lined chip	80.00—
Filled news	75.00—
Solid news	80.00—
White vat lined chip	125.00—
Chip tube and can stock	100.00—
Single manila lined chip	140.00—
Single jute lined chip	125.00—
Kraft liner	117.50 to 122.50

White patent coated:

.020	155.00—
.018	157.50—
.016	160.00—

Book Paper f.o.b. New York— per cwt.

Machine coated, two sides

70 lb. No. 2 enamel, 25x 4 cases	$17.25
38-500, trimmed 4 sides. Carloads	$16.30
45 lb. enamel, 25x38-500, 4 cases	$13.05
trimmed 4 sides. Carloads	$12.10

Uncoated

55 lb. No. 2 offset, 25x38 4 cases	$14.80
500, trimmed 4 sides. Carloads	$13.85
50 lb. A Grade English Finish, 25x38-500, untrimmed 4 cases	$14.05
trimmed Carloads	$13.10
20 lb. envelope, 17x22-500, untrimmed Carloads	$12.40
16 lb. tablet, 17x22-500 Carloads	$11.35

Rag Content Bond—

(White, 5,000 to 10,000 lbs., basis 16 lb.)

100% rag	58.80—
75% rag	45.45—
50% rag	36.20—
25% rag	29.70—

Rag Content Ledger—

(White, 5,000 to 10,000 lbs.)

100% rag	58.80—
75% rag	45.45—
50% rag	36.20—
25% rag	29.70—

Sulphite Bond—

(White, 5,000 to 10,000 lbs., basis 16 lb.)

No. 1	19.85—
No. 2	19.15—
No. 4	17.45—

Sulphite Ledger—

(White, 5,000 to 10,000 lbs.)

No. 1	20.20—
No. 2	19.50—
No. 4	17.90—

News delivered in New York— per ton

Rolls, Standard (Contract)	125.00 to 126.00
Rolls (Spot)	(Nominal)
Sheets	138.00—

Tissues (Carlots) f.o.b. New York— per ream

White No. 1	1.75—
White No. 2	1.85—
Bleached Anti-Tarnish	2.20—
Colored	2.00—
Anti-Tarnish Kraft	1.65—
Manila	2.00—
Napkins, semi-crepe (12½ lb. to M shts.) per cs.	.90—
Napkins, full crepe and embossed (12½ lb. to Mshts.) per cs.	.90—
Toilet, Bleached (M shts.) per cs.	9.35—
Toilet, Unbleached (M shts.) per cs.	7.90—

Towels f.o.b. New York— per case

Bleached	6.80—
Unbleached	5.90—

Wrappings (Kraft) f.o.b. New York— (Basis 50 lb. & heavier) per cwt.

Standard wrapping	8.25—
Butchers, counter rolls	8.50—
Standard bag, mill rolls	7.75—
Shipping sack, mill rolls	8.00—
Gumming, mill rolls	8.25—
Asphalting, mill rolls	8.00—
Envelope, mill rolls	9.50—

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DeZurik Automatic Consistency Regulators operate *accurately* (to within plus or minus .1%), *sensitively* (instantaneous response to changes in stock consistency) and *simply* (a single knob sets regulated consistency.)

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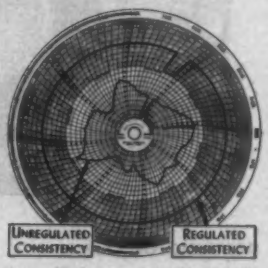

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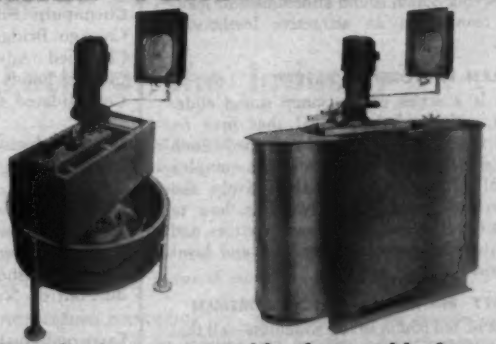

Three basic types provide the trouble-free answer to any consistency control problem: Pipe Line type used on systems under pressure; Pan type takes gravity flow from washers, deckers, save-alls, etc.; Stuff Box type installed ahead of paper or board machines, or ahead of a finishing refiner.

Write for details, including data on Closed Stock System which eliminates entrainment of air in stock going to a paper machine.

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Add a touch of showmanship to your safety program. Films let you tell your training story with the dramatic impact of pictures . . . action . . . sound. You can cut your safety training in half, give fewer refresher courses and get better results by using training films.

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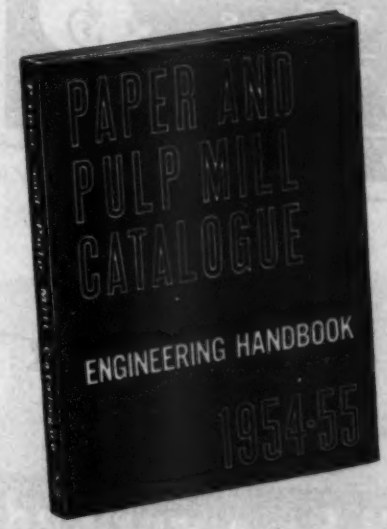

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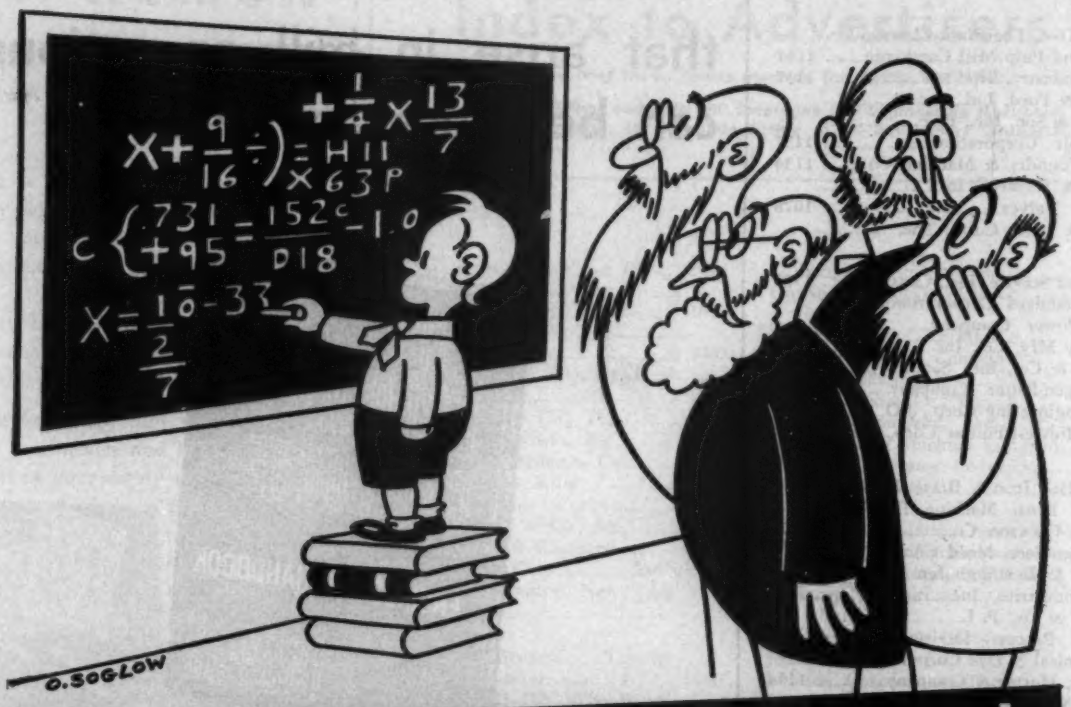

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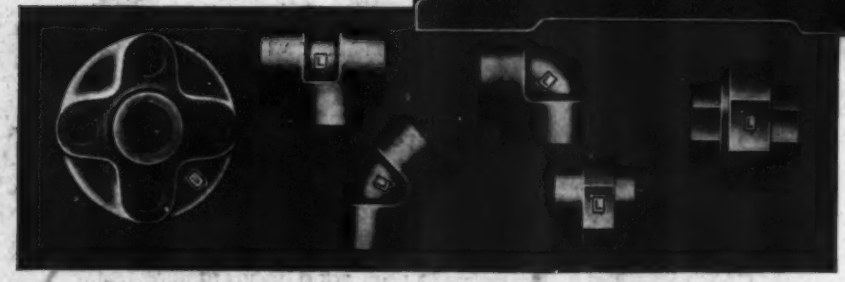
FIG. 2600
125 WP
140°F.



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